

LIBRARY
ROYAL ONTARIO MUSEUM



Digitized by the Internet Archive
in 2012 with funding from
Royal Ontario Museum

RICHARD B. JOHNSTON

LIBRARY

ROYAL ONTARIO MUSEUM

*The Archaeology of the
Serpent Mounds Site*

ROYAL ONTARIO MUSEUM

UNIVERSITY OF TORONTO

ROYAL ONTARIO MUSEUM LIBRARIES



3 1761 04313 4592



R O M

LIBRARY
ROYAL ONTARIO MUSEUM

Occasional Paper 10

ART AND ARCHAEOLOGY

ROYAL ONTARIO MUSEUM

UNIVERSITY OF TORONTO

RICHARD B. JOHNSTON

*The Archaeology of the
Serpent Mounds Site*

ROYAL ONTARIO MUSEUM

Art and Archaeology Editorial Board

CHAIRMAN: *P. C. Swann*

Director, Royal Ontario Museum

EDITORS: *Winifred Needler*

Curator, Egyptian Department

A. D. Tushingham

Chief Archaeologist

RICHARD B. JOHNSTON is at present the Assistant Director of the River Basin Surveys of the Smithsonian Institution. He was field director of the Serpent Mounds archaeological expedition of the Royal Ontario Museum, University of Toronto from 1957 to 1960.

PRICE: \$7.00

© The Governors of the University of Toronto, 1968

PRINTED AT THE UNIVERSITY OF TORONTO PRESS

Contents

Acknowledgements, 5

Introduction, 8

I *The Serpent Mounds Site*, 10

II *History of the Site*, 14

III *Mounds*, 18

1. Serpent Mound (Mound E), 19
2. Mound G, 29
3. Mound H, 32
4. Mound I, 32

IV *Habitation Areas*, 35

1. Southwest of the Mound Group, 35
2. Shell Midden, 40

V *Burial Pits: Numbers 1, 2 and 3*, 48

VI *Ceramic Analysis*, 51

1. Vinette 2 Ware, 52
2. Late Woodland Ware, 64
3. Late Prehistoric; Iroquoian, 67
4. Bodysherds, 67
5. Summary and Comparison, 68

VII *Radiocarbon Samples and Dates*, 70

VIII *Summary and Conclusion*, 72

Bibliography, 76

Figures, 80

Tables, 88

Plates, 99

Acknowledgements

The project and analysis upon which this report centres have many contributors but only one author. It is hoped that some measure of the writer's indebtedness to several institutions and numerous individuals may be indicated in the following paragraphs.

The fieldwork reported herein was conducted under the auspices of the Royal Ontario Museum, University of Toronto, Canada, and it was from that institution that the bulk of the project funds derived. At the conclusion of the fieldwork, the Museum provided the author office and laboratory space, during the winter of 1960-61, to facilitate analysis of the collection accumulated during the five year project.

Financial backing, particularly in the early stages of the project, was also provided by the Serpent Mounds Foundation, established by a group of interested and active citizens of Peterborough, Ontario.

The Ontario Department of Lands and Forests is to be credited with ensuring the future preservation of the Serpent Mounds site by acting to create a provincial park of the 70-acre tract including the site. This agency, notably in the person of Mr. A. F. Helmsley, cooperated with the Museum throughout the course of the work by furnishing facilities for the archaeological camp, services of a land surveyor who compiled a contour map of the mound group, and direct financial aid during the 1959 field season.

The author gratefully acknowledges aid from the Wenner-Gren Foundation for Anthropological Research, in the form of a Pre-Doctoral Fellowship, enabling him to continue his research in 1960-61.

From the time of the writer's first formal training in archaeology he had the benefit of instruction of a high professional calibre from the late Dr. Glenn A. Black. His aid was a direct contribution to the preparation of this report.

Kenneth E. Kidd, formerly Curator of Ethnology, Royal Ontario Museum, and now Professor of Anthropology at Trent University, recommended the Serpent Mounds project and throughout its five seasons assumed responsibility for overseeing the general conduct of the fieldwork; the author deems it a privilege to have worked closely with him and to have profited from his long experience in Ontario archaeology and ethnology.

Dr. A. D. Tushingham, Chief Archaeologist, Royal Ontario Museum, gave his full support to the project from its inception and played an important role in planning, fund raising and administration. He has also aided the project by editing the report manuscript for publication.

Walter A. Kenyon, Associate Archaeologist, R.O.M., was kind enough to allow access to comparative material in the archaeological collection while Dr. Edward S. Rogers, Curator of Ethnology, freely offered whatever help or counsel was frequently asked of him in what was an instructive and rewarding association for the writer.

Most of the faunal identifications were made by the staff of the Royal

Ontario Museum, including: Randolph L. Peterson and Stuart C. Downing (mammals), James L. Baillie (birds) and Edward J. Crossman (fish).

Dr. Walter Tovell, Curator of Geology, R.O.M., was good enough to identify the lithic materials.

The late William Todd, Chief Conservator, R.O.M., examined and tested several specimens in order to identify the material.

While the author is responsible for the field photographs, he is indebted to Mr. Leighton Warren, Royal Ontario Museum photographer, for his patient and careful attention to detail in taking the artifact photographs.

Mr. Ron Vastokas, then a graduate student in the Department of Anthropology, University of Toronto, kindly drafted the sherd profiles illustrated.

Dr. James E. Anderson, Professor of Physical Anthropology, Department of Anthropology, University of Toronto, very generously—despite an already heavy teaching and research load—assumed responsibility for analysis of the large skeletal series from the site. His report forms an important part of the Serpent Mounds record.

The author has had the advantage of advice and other assistance from a number of workers in northeastern archaeology among whom may be mentioned Dr. William A. Ritchie who offered valued commentary relative to certain typological and analytical problems and furnished the loan of a type series of sherds from the New York State Museum and Science Service collection.

Dr. Alfred K. Guthe of the University of Tennessee provided the loan of a type series of sherds from the Rochester Museum of Arts and Sciences and permitted examination of other material in the collection.

Dr. J. Norman Emerson, Department of Anthropology, University of Toronto, also assisted with ceramic problems, especially in the identification of Iroquoian material.

Dr. James B. Griffin, University of Michigan, aided the work with commentary on ceramic relations and in arranging for radiocarbon tests and the identification of some floral and faunal remains.

Dr. Volney H. Jones, University of Michigan, and Dr. Richard A. Yarnell, Emory University, analyzed and reported upon floral remains encountered with burials in Mound E, and Yarnell has independently offered valuable commentary relative to ethnobotany in the Northeast.

Dr. Henry van der Shalie, University of Michigan, furnished identification and remarks on the ecology of mussel shells collected during the excavation.

In thanking all of these gentlemen, I would add the customary admission that errors or inadequacies of interpretation are solely the author's responsibility.

William R. Adams was responsible for the conduct of the fieldwork at the Serpent Mounds site in 1955 and 1956. The author was assistant field director for the excavation in 1956 and in charge of the project during 1957, 1958, 1959 and 1960.

During the course of the fieldwork a total of some fifty persons engaged in the movement of a good deal of earth as regular salaried crew members

and they must be commended for their essential participation. Of this number, eight returned for three field seasons, nine were on hand during two summers and the remainder for lesser periods.

The interest and cooperation of local people is vital to the success of any fieldwork and in this regard the Serpent Mounds project profited on innumerable occasions by the assistance of Mr. James M. McCarthy of Keene, Ontario.

My involvement with this project has been eased on frequent occasions by the ready willingness of my wife, Gwen, to assist in whatever way possible both in the fieldwork and the preparation of this paper. For her long sustained interest, I am most grateful.

RICHARD B. JOHNSTON

Smithsonian Institution
River Basin Surveys
Lincoln, Nebraska
December, 1966

Introduction

The Serpent Mounds site may be described briefly as consisting of nine earth mounds on a high point overlooking Rice Lake, Ontario, with a habitation component nearby and an extensive shell midden along the lake shore. The largest mound, from which the site takes its name, is an earth structure slightly less than 200 feet in length. It averages about 25 feet in width and varies up to six feet in height. Three angles along the length of the mound lend a zig-zag appearance and suggest the "serpent" designation, first applied by David Boyle in 1897. The outline of the mound, however, as can be seen in Figure 2, does not strike one as especially serpentine and certainly it cannot be seriously compared to the well known serpent effigy in Adams Co., Ohio.* Nonetheless, the name of the Ontario mound and site has been retained since it was well established prior to the work reported herein.

Eight other smaller mounds complete the group. Just to the east beyond the more prominent and so-called "head" end of the Serpent is the second largest mound, named the "Egg" by Boyle, which today is a flat-topped structure measuring some 37 by 48 feet at the base. About 40 feet distant, to the northeast, is a single shallow mound. Five smaller conical

*The Great Serpent Mound of Adams Co., Ohio, could not be mistakenly identified. It is a 1254-foot-long stylized serpent effigy well suited to inspire the sort of speculative archaeology current in the 19th century when the first of a considerable body of literature appeared regarding the structure. Squire and Davis (1848) included a description and plan of the mound, the latter appearing with modification in certain subsequent publications. Among the more significant literature to follow was Putnam's (1890: 871-888) report of trenching in the mound, which produced no artifactual remains, and the restoration which provides the effigy its present day form. Randall (1905) compiled a monograph on the mound and a later article by Willoughby (1919: 153-164) was based in part on Holmes (1886). More recently, Greenman (1952) has provided an excellent summary of the history and findings at the site which includes, in addition to the Serpent Mound, conical and elliptical mounds, stone graves and habitation components. On the basis of Putnam's findings, Griffin (1943: 56-64) has concluded that the site consists of two components, the most recent of which, judging from the pottery contained in the upper village level, may be assigned to the Baum Focus of the Fort Ancient Aspect. It would seem reasonable to assume, as Griffin has, the association of the effigy with artifactual, burial and structural remains encountered by Putnam in a sizable conical mound about 400 feet to the southeast. If the assumption is valid, the evidence would indicate that the Serpent Mound may be attributed to an Adena occupation.

Other serpent effigies are not rare in the literature, attesting to the imaginative interpretations elicited by elongate mounds or embankments. Perhaps the least suspect identification would be for a mound in Warren Co., Ohio, reported, among others, by Wright (1909: 1-12). Peet (1903: 123) recognized a long mound near Quincy, Illinois, as a serpent effigy while Bennett (1945: 64-65) similarly identifies the Snyder Mound in Jo Daviess County. Ritzenthaler (1947: 54-56) makes brief mention of a "Vilas County Serpent Mound" in Wisconsin and Lewis (1887: 393-394) describes a "rattlesnake" in Washington Co., Minnesota. There are, in addition, numerous other embankments and mounds cited in the literature (e.g., Hinsdale 1925: pl. 4; Rowe 1956: 70-71) that might be interpreted with equal justification as serpent effigies but which, like the several just mentioned, are no more snake than worm, tadpole etc. A more cautious, if less imaginative, nomenclature would classify them simply as linear or modified linear structures. The Peterborough Co., Ontario, mound is not excluded in this regard and, accordingly, the name of the mound and site is regarded as entirely speculative.

or oval mounds, two of which are joined, are situated immediately south of the two largest mounds while another is located about 100 feet north of the western end of the Serpent. Table 1 provides mound dimensions and orientation and a plan of the group appears in Figure 2.

Excavation in an area about 150 feet to the southwest of the mound group revealed a habitation area of relatively early date, while, north of the mounds, three ossuary-like burial pits of Late Woodland origin were examined.

An important feature, at the foot of the slope below the mound group, along the shore of the lake, was an extensive shell midden where excavations were comparatively rewarding in cultural material, especially ceramics, not abundant in the mounds. A detailed account of the work in these various features may be found in the body of this report.

The Royal Ontario Museum conducted excavations at the site between 1955 and 1960 over an area totalling 9475 square feet. Adams (1956: 14-15) has described the circumstances leading up to this program, while the results of earlier investigations are dealt with in this report.

During 1955 it was possible to devote only three weeks to preliminary work which included the establishment of a grid system and trenching in Mound H. Four benchmarks, steel pins set in concrete, were located at the corners of a 200-foot square in the vicinity of the mound group as a basis for the grid (see Figure 2). Later, as work progressed in the Serpent Mound, it became evident that a clear view of the internal structure could best be obtained by leaving a two-foot-thick wall of earth, called the baulk, along an arbitrarily established centre-line (crest) of the mound. The technique, illustrated in several views of the excavation and notably Plate 5, also proved an indispensable aid in preserving the medial contour of the mound, when, at the end of each season, excavated sections were restored to original size and shape. Upon occasion it was necessary to remove portions of the centre-line baulk to uncover burials, a practice which did not, however, diminish its usefulness in providing an optimum exposure of internal stratigraphy along the irregular long axis. Following this approach, excavation was carried on by removing successive rows of five-foot squares across the width of the mound, furnishing, in addition to medial stratigraphy, a close-spaced series of cross sectional profiles.

In 1957 a preliminary excavation was made in the shell midden deposit after surveying four test squares, projected from the established grid, along the lake shore. The test indicated that additional work should be done in the midden and that it would best be carried on in the framework of a second grid extending along the slope generally parallel to the shore line. Subsequent excavation there during the next two years adopted such a system (see Fig. 6).

The entire artifactual and skeletal collection and all related records deriving from the project are on deposit with the Royal Ontario Museum.

This report was written in 1961-62 as a part of a doctoral dissertation in anthropology at Indiana University. A lengthier version was submitted to the Royal Ontario Museum in October, 1963; the manuscript was reduced in size to the present published form in January, 1966.

I *The Serpent Mounds Site*

LOCALE AND REGIONAL ENVIRONMENT

The Serpent Mounds site is located on the southern portion of Roach's Point (formerly Mizang's Point) on the north shore of Rice Lake in Lot 7, Concession 7, Otonabee Township, Peterborough County, Ontario, at 44° 12' 24" N. Latitude, 78° 09' 14" W. Longitude (Fig. 1). The mound group is situated along the edge of a grassy and nearly flat-topped drumlin hill that drops away on three sides to Rice Lake some 50 feet below (Plates 1, 2 and 3). The eastern slope of the point is moderately steep and covered with an open oak woods while the gently rounded hilltop and more gradual western descent are open grassland. The latter areas have been cleared for years but it may be supposed that formerly the entire point was thickly wooded as several nearby islands and other commercially unsuitable tracts remain today. Standing on the hilltop by the mound group one may see a number of neighbouring islands (Plate 1) in a view that extends for several miles up and down the lake and to the rolling hills that form the south shore. No doubt the view afforded from this easily accessible lookout influenced selection of the spot some 2000 years ago as it did in A.D. 1955 when a provincial park was created out of the 70-acre point.

The topography of Peterborough County, like that of most of southern Ontario, is a result of glacial action which buried the local bedrock under a considerable depth of drift. The entire area is one of low relief and well known to physiographers for its development of drift features, especially drumlins. In south-central Ontario, commonly defined as extending between Lake Ontario and the Canadian Shield to the north, approximately 4000 of these oval ridges have been counted (Chapman and Putnam 1951: 20). In the centre of the region, in the Peterborough district, drumlins are of typical form and more densely distributed than elsewhere in the field as indicated on the Peterborough sheet of the National Topographical Series where at least 1000 are recorded (Chapman and Putnam 1951: 206). In this area the drift hills are characteristically oriented in a northeast-southwest direction, are less than a mile in length, a quarter of a mile or less in width and approximately 75 feet in height. There are often four or five to the square mile which leaves little intervening space (Chapman and Putnam 1951: 209).

After deposition of the drumlins and other drift structures—including well-developed examples of "serpentine" eskers—and withdrawal of the ice from the area, sedimentation in glacial lakes contributed further to the present-day landscape. Glacial Lake Iroquois, which occupied the present basin of Lake Ontario and contiguous low lying areas, extended in an embayment up the Trent River Valley as far as Rice Lake where it flooded parts of the drumlin field and left clay deposits in the lowlands that today are plains or flats if dry and marsh or swamp when low-lying and flooded by any of the numerous lakes or rivers of the region. Chap-

man and Putnam (1951: 239) say of the landscape that "Lacustrine deposits of various types are found in the lowlands of the Trent basin all the way upstream to Peterborough, and although in many places the old shorelines are vague, the general 'drumlin and clay flat' pattern of the landscape is unmistakably characteristic." Glacial spillways, draining old Lake Algonquin from the neighbourhood of Georgian Bay in the northwest down through the Kawartha Lakes and south into the Trent or Rice Lake embayment of glacial Lake Iroquois, cut the valleys of the present-day Otonabee and Indian Rivers which empty into Rice Lake. Rice Lake today is about 23 miles long and drained from the east end by the Trent River which extends from there 150 miles along the floor of the old Trent embayment of Lake Iroquois, to empty into Lake Ontario (Bay of Quinte) at Trenton. The nature of the river today reflects the glacial past for, as Chapman and Putnam remark (1951: 122): "The whole Trent River system is an example of the youthful, deranged, non-integrated type of drainage resulting from Pleistocene accidents." The chain of glacial remnant lakes and navigable rivers extending between the Bay of Quinte northwestward to Georgian Bay allowed the development of the Trent Canal connecting Lake Ontario and Lake Huron. However, by the time the waterway was completed, about 50 years ago, competing means of transportation eliminated any commercial usefulness it might have had and it remains today a route for pleasure craft only. Prehistorically, the opportunities for water travel seem to have been utilized extensively judging from the number of sites to be found along the shores of the rivers and lakes of the area.

Climatologically the northeast is characterized by relatively great variation between summer and winter as is typical of a continental environment. In the Great Lakes area some amelioration of the severity of seasonal and daily changes may be noted in the immediate vicinity of water bodies but the tempering effect extends only a short distance landward. Whether or not south-central Ontario experiences a long or a short summer is a matter of climatological definition but it is certain that the summers, and notably the growing seasons, are not of the same duration as south of the Great Lakes in, say, the northern Ohio Valley.

According to Dice (1943: Map 1) south-central Ontario is included in the *Canadian* biotic province, a zone which he shows as extending over most of New York and central Pennsylvania in the east but to project southward only to the latitude of Lake Ontario in the west across the Great Lakes. His *Carolinian* province occupies the east-central U.S., including the Ohio Valley, and as is usually the case between such divisions, "The boundary between the Canadian and Carolinian provinces is not sharp . . ." (Dice 1943: 14). The forest cover of southern Ontario is essentially a transition between the boreal coniferous and deciduous forests of eastern North America and in the south-central portion of the province trees are prevailingly broadleaf hardwoods (Putnam 1952: 226). Dice (1943: 15) lists the sugar maple, beech, yellow birch, northern white pine, eastern hemlock and basswood as common to the region with black spruce, tamarack and northern white cedar found growing in bog or

swampy conditions. The Carolinian province, neighbouring to the south, lacks the development of conifers and pines characteristic in the north while showing a diversity of hardwood species. Today, at the Serpent Mounds site, a few white pine stumps remain amid the oak grove through which the site extends. Botanic identification of charcoal associated with a burial in the Serpent Mound, which produced C14 date M-850, places it in the white pine group which is reported (Putnam 1952: 226) to show a proclivity to growth on drumlins.

Soils of the region (podzolics) are considered good for present-day agriculture but farming by modern methods on drumlins suffers as a consequence of the steep slope, stoniness and lower-lying areas that tend to be wet or swampy. These disadvantages, however, would not appreciably affect horticultural methods as practiced in Woodland times.

The question of whether or not horticulture *could* have been practised in south-central Ontario by Middle Woodland or earlier times would seem to rest principally upon climatological considerations while the question of whether or not domesticated plants *were* utilized by Middle Woodland times is elucidated archaeologically by negative evidence only at this time. Speculation or generalization as to the suitability of the region is difficult because of its position on the northern periphery (tension zone) of the climate allowing agriculture or, particularly, corn growing. It is in this boundary area that the nuances of climatic change would be most noticeably registered and where today minimal conditions generally prevail for corn farming. Although in the Peterborough district, unlike the hot and humid Midwest, corn is never "knee high by the fourth of July," climatological statistics and ethnological observations demonstrate the existence historically of suitable conditions. Over a 78-year period the Peterborough weather station has recorded an average yearly span of 135 consecutive frost-free days (Boughner, Longley and Thomas 1956). Ethnological evidence, plotted by Driver and Massey (1957: Map 34 and p. 215), indicates that the limit of maize growing corresponds approximately with 47° north latitude which strikes across Ontario just above Georgian Bay, considerably north of the Peterborough-Rice Lake area. The notable success of Iroquoian corn agriculture, reflected in the distribution cited above, may well have been based on a variety which matured more rapidly than those in use today and, in any case, was probably a post-Middle Woodland development. Volney Jones (1948: 23-24) has reported, for example, a Micmac (obtained from Quebec) corn adapted to a 75-day growing season and K. E. Kidd (personal communication) has grown a variety of Mandan maize in the Toronto area to maturity in 52 days, which may be a record for brevity. In both instances the plants were short, about 2 to 2.5 feet, and produced small ears.

Prior to the Late Prehistoric horizon, evidence of the use of domesticated plants in Ontario is confined to the Late Woodland period, notably Kidd's discovery (1954: 170) of maize kernels at the Krieger site near Chatham in the relatively warm southwest of the province. Of more recent age are the examples from the Miller site near Pickering in Ontario County northeast of Toronto (Kenyon, personal communication) and the corn

recovered at the Goessens site in Norfolk County in the southwest of the province (Jones n.d.). Remains of earlier date are lacking.

It may be concluded that the introduction of horticulture or maize growing in south-central Ontario could have taken place in Middle Woodland times so far as climatic conditions were concerned; Griffin (1960) speaks of a warmer and therefore more favourable climate for North America during this period. Subsequently, maize is known archaeologically from the region during Late Woodland times in spite of periods of cooler forest-shortened growing seasons postulated by Griffin. Nonetheless, the uncertainties of early agriculture in a tension zone with less than fully adapted plants may well have been sufficient, as Byers (1946: 11) has suggested, ". . . to inhibit northward spread of a culture depending primarily on corn agriculture for its sustenance." Certainly fish and wild plant foods (e.g., wild rice as at Rice Lake) were dietary staples north of the Great Lakes and hunting, of the deer especially as elsewhere in the northeast, played an important part in the food quest. Relatively abundant archaeological evidence of the latter in the absence of early remains of domesticated plants in the northeast, and Ohio Valley, suggests that archaeologists should do well to keep in mind the importance of food gathering as a rewarding technique of food production among developed Middle Woodland groups heretofore presumed, on very little evidence, to be accomplished agriculturalists.

The faunal resources available in the region during occupation of the site were probably much the same sort as extant today but no doubt occurred more abundantly. Complete analysis of the faunal remains from the site has not been undertaken but identification of animal material accompanying burials reveals only species which have been recorded in southern Ontario historically. These include the beaver, mink, timber wolf, black bear and dog. Identified non-mammalian remains include the common loon, the painted turtle and scales of some species of the sunfish family. In the shell midden, the great bulk of the bone refuse pertains to the deer. Obviously, the accumulation of the midden betrays a heavy emphasis upon shellfish gathering on the part of the occupants, at least while at the site. Bird and fish remains are by no means lacking but they form only a small part of the refuse (these and related points are more fully developed in Chapter IV). Although Rice Lake is known to be undergoing changes, becoming atrophied (filled in, with warmer waters and heavy weed growth), it is doubtful that the faunal resources available today differ markedly or in a culturally significant way from those at the time of occupation of the site except perhaps quantitatively. One change is quite evident at Serpent Mounds in the present rarity of shellfish in the shallows surrounding the point compared to evident abundance formerly judging from the extensive midden deposit. A second presumed divergence from prehistoric conditions is the virtual absence today of wild rice which once grew in great amounts as documented, for instance, by Boyle's remark in the relatively recent past (1897: 38) that "hundreds of acres" of Rice Lake were occupied by the plant.

The area around Rice Lake appears, then, to be one from which a

diverse and relatively abundant livelihood could be gained. In spite of the supposed quantity of food resources in the region, it is suspected that the occupants of Serpent Mounds site did not take complete advantage of the full range of, at least, the faunal resources available. This speculation is based upon the paucity (except in one allegedly early feature of the site) of hunting or fishing equipment or the remains of game in notable quantity in the face of evident emphasis upon shellfish gathering as seems demonstrated by the extensive shell midden deposit.

II *History of the Site*

Relative to the archaeological problem at the Serpent Mounds site is its position along the Trent Canal and the various excavations, both reported and unreported, that have been undertaken, particularly in the mounds, during the period of at least the last seventy-five years. Both circumstances have served in their own ways to obscure or eliminate opportunities for the project reported herein to produce a maximum of findings bearing upon prehistoric events at the site.

1. THE TRENT CANAL

As noted in the previous section, Rice Lake is a part of the Trent Canal system which extends from Trenton, Ontario, on the Bay of Quinte to Georgian Bay via the Trent River, Rice Lake, the Otonabee River and connecting waterways to the northwest. The process of canalization consisted for the most part of building dams and locks at selected points along rivers of the route in order to control the depth of water.* Relevant to the Serpent Mounds site is the dam at the foot of Rice Lake on the Trent River at Hastings which regulates the water level upstream to Peterborough. Since parts of the site form the present shore, the question arises as to the location of the old shoreline prior to elevation of the lake water level and the amount of submergence that occurred on the lower-lying fringes of the point. The lake bottom immediately offshore today has a rather gradual slope which would indicate that considerable land was flooded as a result of the rise of water level. Logging operations in the district in the earlier 19th century prompted construction of the first dams which were modified or rebuilt periodically before 1883 when systematic recording of lake water level was begun. Because of the nature or lack of earlier records, no certain assessment of the total rise in lake level is possible but it may be estimated that approximately six feet more of water are held in the lake today than prior to construction of dams at Hastings. An accurate reconstruction of the old shoreline bordering the site would be possible if the contour of the lake bottom immediately offshore were accurately known but no detailed

*The writer is indebted to Mr. W. H. Frise of the Peterborough office of the Trent Canal System for information concerning development of the route.

soundings are available around the point. Nonetheless, observations of a casual sort suggest that a six-foot drop of water from the present level would expose a strip at least 200 feet wide around the point. Regardless of the exact extent of whatever flooding may have occurred, it is certain that a part, and perhaps a heavily occupied part, of the site is now submerged. A considerable amount of artifactual material has been picked up in the shallows immediately offshore but the muddy bottom and luxuriant weed growth in deeper water frustrated attempts at further investigation. Today the midden deposit along the sloping east shore of the point extends in places to within a few feet of the water line and, rather puzzlingly, may be presumed to have been somewhat removed from the shoreline when the lake was at a lower undisturbed level. Just why the midden was so far removed from the water, if the estimate is a reasonable reflection of actual conditions, is not easy to understand but it is possible that a part at least of the now submerged shore that once extended between the midden and the water was marshy and not suitable for habitation.

2. PREVIOUS EXCAVATION

Two previous excavations in the mound group have been reported (Boyle 1897; Montgomery 1910) but it is certain that these accounts record only a fraction of the investigations into the mounds prior to the Royal Ontario Museum project of 1955–1960. Sufficiently extensive damage had already been done in the 19th century to prompt Boyle (1897: 23) to remark that:

Reference has already been made to the morbid depredations of diggers anxious merely to lay bare human remains or to possess a skull. At numerous points along the top of the serpent mound excavations for this purpose have been made, but in no case apparently to a depth exceeding two feet. . . . It will be seen that as in every instance the vandalholes have been sunk on the crown of the ridge, the result is serious disfigurement.

Findings of the most recent project confirmed and extended the evidence of disturbance uncovered by Boyle and Montgomery. Figure 3 shows the distribution of major excavations into the Serpent Mound, excluding numerous less extensive but nonetheless destructive intrusions. In a number of instances the field party noted, not without some satisfaction, that old diggings had been undertaken in already disturbed sections, an experience reported by Boyle and Montgomery. Typical conditions were revealed during the 1958 field season in excavating the Serpent Mound from about the mid-section of Intrusion No. 2 westward, concerning which the author (1959: 1–2) reported:

It is indeed unfortunate that the most recent season of work revealed further extensive intrusions in the mound. Old diggings have been found in such quantity each season as to compel the statement that the structure is thoroughly disturbed in its upper portions and, as well, to quite a depth in places. The fact is regrettable if only in terms of the loss of artifactual and bone material but even more severe as the principal factor frustrating detection of evidence bearing upon the mode of construction of the mound and other problems involving the original internal structure. Of the thirty-five feet of excavation

along the length of the Serpent Mound in 1958, only nine feet of the crest had been left undisturbed by previous digging. The twenty-four feet of backfilled intrusions exposed averaged two feet in depth but reached in places as far as 3.5 feet below the surface, in which case none of the original carried earth of the mound was intact. More superficial disturbances elsewhere, two feet or less in depth, allowed the present excavation to recover material in context from the lower levels of the mound, e.g., Burial No. 34, although the lack of undisturbed overlying profiles was a serious handicap to interpretation of the sequence of events involved. Other burials, however, had suffered disruption, including what has been labeled Burial No. 31, the partial remains of at least three adults discovered in a disarticulated pile at the bottom of a three foot deep intrusion. A distinct shovel mark could be seen on one humerus, included with the other bones as the first of the backfill in an extensive pit (No. 2 in Figure 3).

The distribution of intact burials encountered in the Serpent Mound, shown in Figure 4 to be concentrated along the centre line of the mound where they were recovered from around and beneath intrusions, suggests that earlier digging into the crest uncovered numerous graves. Boyle and Montgomery mention a total of more than 36 burials and the recent work rediscovered the much broken and disarticulated remains of at least 40 individuals in backfilled pits, one of which is thought to have been dug by Montgomery.

Elsewhere on the site, evidence of earlier digging was discovered in both Mounds G and I where portions of central burial areas had been disturbed. Counting, in addition, Boyle's excavations in various other mounds and that reported for Mound H (Boyle 1897: 24; Adams 1956: 16), it is noted that not one member of the mound group escaped some investigation prior to the work of the Royal Ontario Museum. The important shell midden at the site appeared to have suffered only minor examination (there is no indication that either Boyle or Montgomery was aware of it) while the surficial stratigraphy of the habitation area southwest of the mound group had been destroyed by ploughing.

David Boyle mapped six mounds in the group, assigning them letters A to D and the names "Serpent" and "Egg"; the latter two are now known also as, respectively, Mounds E and F. He noted as well the presence of what is now called Mound H but apparently failed to recognize the two smallest and least conspicuous structures which have since been labelled Mounds G and I. The current project has, then, retained the letter designations established by Boyle and added alphabetical labels for those mounds which he evidently overlooked.

Boyle dug in six of the mounds, most extensively in Mounds E (the Serpent Mound) and F (Egg Mound) with "superficial examination" of Mounds A, B, C and D. He found little else except burials, many of which he thought to be intrusive, that may have been, on the other hand, simply disturbed. That he may have confused intrusive and disturbed burials is suggested in his remark concerning disturbances that "as the cast-up earth about these places [disturbed areas] is mingled with bone-fragments, there is little doubt that the earth has been used for burial purposes by a people who succeeded the mound-builder . . ." (1897: 23). The statement is puzzling, of course, as it does not follow that bone fragments in backfill

derive from intrusive burials. On the contrary, data bearing upon the original disposition of disturbed material cannot be ascertained. Montgomery, thirteen years later, reported no intrusive burials nor were they found by the latest investigation. It is possible, of course, that intrusive graves did exist at one time but have since been disrupted by casual digging.

Boyle opened the Serpent Mound in two places, about 70 feet from the west (or tail) end, in an area not excavated by the Royal Ontario Museum, and at the eastern extremity finding, respectively, "much decayed" human bone and "comparatively recent burials" under shallow fill containing no artifactual material. More attention was directed to Mound F where in the fill he encountered two burials in a "sitting position" and a skull and long bones at a depth of two feet. A foot below, he reported a skull, an animal mandible, canid teeth, mussel shell and charcoal. At the base of the mound he found a burial lying on the right side. The fill of this mound also produced two or three fragments of pottery. Limited digging in Mounds A, B, C and D produced, from Mound B, an adult and child interment and, from Mound D, "a skull." The results from Mounds A and C were perhaps negative as he makes no mention of them.

Montgomery, in 1909, confined himself to the Serpent Mound (Mound E) wherein he dug four numbered pits. Three were sunk in "the highest and widest part" which occurs around the grid line between subdivisions D12a and D12b as shown in Figure 3. Montgomery's Excavation No. 1 in this area produced only four disturbed burials and "a little bit of decorated pottery" (1910: 3). Nearby, his Excavation No. 2 produced the following from the fill of the mound above the original ground surface:

1. "ten human skeletons" at a depth of four or five feet beneath a horizontal layer of boulders,
2. a small rim sherd "showing incised decoration,"
3. 5 *Oliva* shells (*Oliva literata*)* ground down at one end for stringing,
4. 28 beads of *Marginella apicina* ground down for stringing,
5. 320 disc beads of marine shell and,
6. one pendant, a cut and perforated fragment of marine shell (*Fulgur perversa?*).

Montgomery Excavation No. 4, apparently about 75–80 feet east of the western extremity of the mound in an area not excavated by the Royal Ontario Museum, was entirely in a previously disturbed section and contained bone fragments, mussel shell and charcoal. Excavation No. 3 was undertaken "... within twelve feet of the eastern end of the mound ..." (1910: 4) and here he reports seventeen human skeletons, most of which were in "an extended or nearly extended position," beneath "a layer of twelve large glacial boulders" a distance of two and one-half feet below the surface. A bone awl was found with the burials. This excavation appears to correspond with Intrusion No. 1 shown in Figure 3 wherein the remains of 26 disturbed individuals were re-excavated by the Royal Ontario Museum. As already mentioned, Montgomery saw no evidence of intrusive burials and in a statement that may reflect upon his excavational methods

*All identifications are Montgomery's.

he observes, enigmatically, that "Although it is possible that many of the burials may have been secondary, no evidence of secondary burial was observed in any of these four excavations" (1910: 5).

In light of the data collected by the Royal Ontario Museum, little importance can be attached to the findings of Boyle or Montgomery owing in part to the nature of the findings, duplicated by the recent work except as noted below, but principally to the lack of precise documentation. Only a part of the artifactual material recovered is preserved in the Royal Ontario Museum today and the catalogue information on osteological material is either nonexistent or fails to provide significant provenance data. The only earlier reported findings not duplicated lately are the *Oliva* and *Marginella* beads and marine shell pendant recovered by Montgomery from the fill of the mound in his Excavation No. 2. Montgomery's accounts of finding burials beneath "layers of boulders" sounds suspiciously like the stratigraphy observed in disturbed portions of the mound beneath which burials occurred. For the most part, old pits had not been carried to the base of the mound and when backfilled, as all evidently were, the considerable rock fill was usually replaced first, sometimes above and/or mingled with disturbed bone, before the earth was replaced. In the cases where burials occurred beneath pits of this sort, the stratigraphy upon re-excavation would indicate burials made beneath boulder pavements. No instances of such structures were discovered in undisturbed circumstances by the most recent investigation.

III Mounds

During the course of the project at the Serpent Mounds site, the Royal Ontario Museum carried out excavation in four of the mounds (Mounds E, G, H and I) by means of 197 five-foot squares (a total of 4,975 square feet of area). In spite of the fact that the Serpent Mound (Mound E) was known to have been previously examined by Boyle, Montgomery and an unknown but apparently large number of others, it was extensively excavated, or in large part re-excavated, by the museum field party. Mounds G and I were selected for examination because they showed no external signs, nor was there any written record, of having been disturbed. However, as work progressed in these structures it became evident that they too had been pitted at some time but not extensively damaged. Mounds A, B, C and D all exhibited apical depressions betraying previous excavation. Although Boyle reports making "superficial examination" in each of these mounds, the writer doubts that he would have failed to backfill the pits. Boyle refilled the trenches he dug in Mound F, but they can still be discerned, while all indications in the Serpent Mound (Mound E) were that both Boyle and Montgomery, to their credit, completely backfilled their various diggings. Mound H was also known to have been disturbed earlier and due in part to this fact was selected for test trenching in the brief initial field season at the site in 1955.

1. SERPENT MOUND (MOUND E) (Plates 3-30)

Examination of the principal mound of the group (Plate 4) occupied parts of four field seasons during which time a total of 153 five-foot squares (3,825 square feet of area) in and around the structure were excavated well below the base of the mound to an average depth of four or five feet. Almost the entire eastern half of the 194-foot-long mound was excavated (Plate 5) and later reconstructed, as was a section near the west end (Plate 6). Altogether, 102 feet of the length of the mound was investigated. Complete mound dimensional statistics may be found in Table 1.

Structure

In addition to the recovery of material, of course, every effort was made during the course of the excavation to reveal, record and accurately interpret such information as might be exhibited by the internal structure. Portions, at least, of the original ground surface upon which the mound was built could be discerned in profiles except near the periphery of the mound where the otherwise dark layer was not visible. The disappearance of the old humus line beneath the edges of the mound is somewhat puzzling and is perhaps best explained as a result of natural weathering of the soil profile which obliterated evidence of the layer where it was covered by only a shallow depth of fill and unprotected as it was nearer the centre of the mound. The old sod line is shown in Plate 7 as exposed during excavation in the western portion of the mound, where it may be seen, beneath the crest of the mound, to have been removed, as in several other instances, in the course of Indian excavation of a submound pit. The earth fill of the mound, or at least that part of it left undisturbed, was composed almost entirely of a homogeneous brown loam and only occasionally was earth of another type encountered. In places, areas of grey clay fill were seen in profiles while the occurrence of dark charcoal-impregnated earth lenses elsewhere suggested loading. Throughout the mound the fill contained considerable quantities of rocks, some of large size, which were never recognized as having been arranged in any way but rather seem to have been included only as fill. A normal humus zone covered the surface of the mound except in disturbed areas where it was not so distinct or well developed.

An attempt was made to analyze the pollen content of the present humus zone of the mound and the buried old sod line beneath the mound but owing to the adverse effect of soil conditions upon the preservation of pollen, the results were not so enlightening as had been anticipated. The report (personal communication) by Donald W. Engelhardt, then of Indiana University, states that:

In the palynological investigation of the samples the technique of using a bromoform-acetone mixture was employed for separating the microfossils from the soil. The technique was developed by Dr. David G. Frey, 'A Differential Flotation Technique for Recovering Microfossils From Inorganic Sediments' from *The New Phytologist*, Vol. 54, No. 2, May 1955.

The analysis of the soil samples was not too successful due to the absence of tree pollen in the samples. This may possibly be explained by the fact that the soil conditions were not conducive for the preservation of pollen. After

making a series of six slides from each layer and finding a surprising absence of tree pollen, a p^H test was run on the soil samples. In D11b/147, soil sample from the surface of the mound, present top soil, the p^H was found to be neutral to slightly basic. In D11b/148, soil sample from the old sod line buried beneath the mound fill, original surface, the p^H was found to be strongly basic. The preservation of pollen is best under acid conditions. This may explain why there is a lack of pollen in the sample from the old sod line, but the reason for not finding large quantities on the present surface cannot be explained.

The results of the pollen analysis showed that in sample D11b/147 [from the present surface of the mound] the pollen was mainly from plants found growing in or near an aquatic habitat.

Juniper	16%
Salix	9%
Equisetum	13%
Acorus	2%
Myriophyllum	1%
Tofeldia	9%
Graminae	4%
Spores	25%
Unknown	19%

In sample D11b/148 [from the buried humus level beneath the mound] very little pollen was found, not enough for an accurate count. There were fragments of pollen grains and spores but the material was inadequate for proper identification.

Throughout excavation in the Serpent Mound, careful attention was devoted to internal structural features in the hope of discovering evidence relating to the question of whether the mound was built in a relatively short span of time or by accretion over a longer period. If construction had proceeded by the periodic addition of earth, it would be expected that buried sod lines and other internal stratigraphy would so indicate but structural remains of this sort were not encountered. On the other hand, owing largely to the extent of old excavation, as described in the previous section, it is not possible to assert on structural grounds that the mound was built as a single continuous effort. Circumstantial evidence, particularly the discovery of 25 intact burials and the disturbed remains of at least twice that number of individuals, during excavation of about half of the mound, would favour the assumption that construction continued intermittently over a number of years. In addition, the amount of carried earth, representing the considerable labours of an organized group, would indicate the likelihood that the mound, and the burials included, had been accumulated over an extended period of time.

Two radiocarbon dates from the Serpent Mound, from points separated by 111 feet in the mound, tend to reinforce the assumption that mound construction continued, intermittently, over a period of time. The spread of 174 years between sample M-850 (dated at A.D. 128, from Burial No. 4 near the eastern end of the Serpent Mound) and sample M-1105 (dated at A.D. 302, from a charcoal mass near the western end of the mound), together with the inferential evidence assumed above, would seem to form a reasonably firm case for intermittency of construction. A more detailed discussion of the radiocarbon dates from the site appears in Chapter VII.

Burials and Grave Goods (Plates 8 to 26)

Artifactual material occurred in the mound as grave goods and occasionally as isolated finds in the fill, as will be detailed presently. Principally the structure contained or covered burials interred in the carried earth or in sub-mound pits. The distribution of the 25 intact burials in the Serpent Mound is shown in Figure 4 and the interments summarized in Table 2. It is anticipated that laboratory analysis of the skeletal collection will reveal additional disturbed or secondary individuals not segregated in the field, including instances of fragments of additional individuals placed with primary burials. Twelve, or half of the individuals, were in sub-mound pits, of which seven were accompanied by grave goods. Only three of the 13 burials in the fill of the mound had grave inclusions. In sub-mound pits, six of the 10 primary burials were provided with goods while Burial No. 7 was the only secondary interment to have this treatment. Four primary individuals in the mound fill exhibited varying degrees of partial cremation. In at least four instances, more than one individual was found in a grave. Burial Nos. 57, 58 and 59 were grouped in mound fill, Burial Nos. 55 and 56 had been placed on the old ground surface together and covered with earth while Burial Nos. 1 and 2 were similarly arranged in a sub-mound pit. Burial Nos. 5, 7 and 12, likewise, shared a common grave below the mound. There appeared to be a tendency, rather than a pattern, for primary burials to be found most often in sub-mound pits and for grave goods to occur with them more often than with other types of interments. Most of the secondary burials had been placed in the fill where none had grave goods. The four partial cremations accounted for half of the primary burials in the carried earth of the mound. The distribution of individuals according to age is essentially identical whether buried in the mound fill or pits beneath the mound, there being about an equal number of adults and immature persons included in both places.

Burial Nos. 1 and 2 were encountered in the eastern end of the mound between three and one-half and four feet beneath the surface in a common sub-mound pit. The burials are illustrated in Plate 8 and located in the mound, as are all other burials, in Figure 4. Burial No. 1, the northernmost of the pair, was a tightly flexed male lying on the right side with the head to the east. A female, Burial No. 2, had been placed immediately to the south of and back to back with the male in a tightly flexed position on the right side with the head to the west. A number of objects (Plate 9) had been scattered throughout the grave area including, from just south of the skull of Burial No. 1, cut mandibles and maxillae of a timber wolf (*Canis lupus*). From, chiefly, the vicinity of Burial No. 1, one silver and four copper rolled-foil beads were recovered together with small unidentifiable mammal and rodent bones and a bird mandible near the sternum of the burial. As was the case in a number of other pit burials, refuse had been scattered in overlying fill and in this case one copper and two silver foil beads, 10 shell disc beads and a small coprolite were found to the west and about a foot above the grave. From this area also, in mound fill, a blue-grey flint projectile point 33 mm. in length was recovered.

Nearby, Burial No. 3 was discovered in a shallow submound pit resting

in loam beneath the old sod level at a depth of about three and one-half feet below the mound surface. This infant individual had been arranged in a partly flexed position with the head, which had been removed by previous excavation, to the east.

Burial No. 4, a primary inclusive individual fully flexed on the right side, at a depth of only a little over two feet below the mound surface in fill, had undergone thorough if incomplete *in situ* cremation. Charred wood remains, evidently sections of two small logs, uncovered immediately southwest of the vault, and other charcoal may be seen (Plate 10) in some quantities throughout the burial. Dated charcoal sample M-850 (A.D. 128 ± 200 years) was derived from the charcoal concentration adjoining the skull as was a sample identified botanically by T. K. Wilson, formerly of Indiana University, who has reported (personal communication) that:

Although the wood is quite heavily carbonized, there are still a few key features present. The wood is definitely a gymnosperm and I have every reason to believe that it is a member of the white pine group. The white pine group comprises *Pinus strobus*, *Pinus monticola*, *Pinus lambertiana*. . . . On the basis of wood anatomy alone and due to the condition of the sample, it is impossible to go any further than the general group. Identification of members of this group is based on very minute details that were not preserved in the charcoal. My reasons for believing this wood to be a member of the white pine group are as follows:

Longitudinal resin canals present (although poorly preserved) ca. 115 microns in diameter, Tracheid diameter ca. 25 microns, Pits present on radial walls of tracheids, Ray tracheids present, of the non-dentate type, and Tracheid-ray pitting of one large pit. We can narrow this field down somewhat by considering the geographical range of the various members of this group. Taking this into account, I would guess that *Pinus strobus* (white pine) would be the most likely suspect. However there is no *direct* evidence for this conclusion.

It may be added parenthetically that Wilson discovered pollen of the *Haloragaceae* family (Water Milfoil), *Proserpinaca* genus (Mermaid Weed) in the charcoal sample. Although the pollen was quite abundant, it is not possible to say whether it was introduced before the burial and charcoal were covered, was in the soil placed over the cremation, or contaminated the sample when it was re-exposed in 1956. The plant grows under marsh conditions in shallow water along shores or in peaty or muddy quagmires. Suitable habitats exist today around the site as they no doubt did during construction of the mound.

Burial Nos. 5, 7 and 12 occurred together in a pit beneath the mound. Burial No. 5, like No. 3, was a partly flexed primary infant. Slightly lower, to the southwest, and adjoining, at a depth of 4.5 feet below the surface, was secondary adult Burial No. 7 consisting principally of a skull and long bones. An infant, Burial No. 12, was found partially articulated in the southern portion of the Burial No. 7 area while some, chiefly skull, parts were scattered elsewhere in the grave. With Burial No. 7 were two cut bear (*Ursus americanus*) mandibles and maxillary elements in the pelvic area as indicated by the small white arrow in Plate 11 (see also Plate 12). Refuse around the burial included one piece of charcoal, 11 fragments of mussel shell, two pieces of flint and one of quartz, and fish and bird bone.

Burial No. 6 occurred on the northern edge of the mound and, in spite of original placement in a shallow sub-mound pit, was buried beneath only about 2.2 feet of fill. The burial rested upon grey hardpan and in brown loam which is the typical subsoil below the old humus zone. The latter, however, could not be discerned here as elsewhere in peripheral sections of the mound. This primary but much broken adult individual had been interred on the back with the legs drawn up tightly over the lower arms. A thin side-notched blue-grey flint projectile point 37 mm. in length (Plate 12) was found among the ribs on the left side of the thoracic region. It is similar to several points from the excavation of the midden on East Sugar Island (Ritchie 1949a).

Burial No. 8 was found in mound fill two and one-half feet above Burial No. 7 and two feet beneath the mound surface. The head and shoulder region of this primary partly flexed adult had been burnt after placement in the mound fill in which, at the same level, a St. Lawrence Pseudo Scallop Shell type sherd was associated.

Burial No. 25 was a good example of a bundle burial containing adult long bones and pelvic elements. These remains had been laid on the old ground surface and covered with almost two feet of fill.

Burial No. 26 was also secondary, disarticulated juvenile remains, and had been included in fill a little over a foot below the mound surface.

Burial No. 28 had been made in an oval pit extending 1.4 feet below the original surface that had been covered subsequently with about 2.5 feet of mound fill. The grave contained the complete and articulated remains of a young adult male, placed on the left side with the arms and legs drawn up in a typical flexed attitude (Plate 13). The burial was distinctive in having a number of objects included with it in the vicinity of the skull, including five shell disc beads, two concretions, four fossils (a horn coral and three nautiloids of the genus *Michelonoceras* of Ordovician age), one flint chip, three clusters of small mammal bones (perhaps fox), the cut femur capitulum of a small mammal (perhaps a dog), fish bone and scales (the latter from some species of the sunfish family (*Centrarchidae*)), and the beak elements of a common loon (*Gavia immer*). A carved-in-the-round limestone effigy, found beneath the skull, probably represents an animal, perhaps a bird, although this identification is only conjectural. The figure, shown as number 6 in Plate 15 with other grave goods, was 74 mm. in length and exhibited traces of red ochre staining. A ground red slate point and a bear canine (*Ursus americanus*), ground flat into the pulp cavity on one surface and notched along the edges of the other, had been placed in fill near the pit edge at about the old ground level. Perhaps the slate point was an heirloom or had been collected, as the type is characteristic of Archaic Laurentian. However, as other stone work at the site is considered, a number of such seeming anachronisms will be encountered. At the same time, modified bear teeth have been found in Adena-Hopewellian context and in New York Point Peninsula (e.g. Rene Menard No. 1, Ritchie 1944: pl. 65).

Burial No. 30, an infant less than six months old, was found in an articulated position 16 inches below the surface in fill immediately beneath

a disturbance containing the disarticulated, broken and partial remains of at least three individuals labelled Burial No. 31.

Burial No. 34 was found in a shallow oval grave, at about the level of the old humus, which perhaps would have been made deeper had a large rock not been exposed just below the surface. This individual was arranged in a compact pile directly on top of the boulder. Both legs, including the feet, were properly joined and in an extremely flexed position. Fourteen articulated vertebrae extended from the complete pelvis. The burial, then, was articulated, except for the lack of ribs, below the mid-thoracic section. Elements of the upper part of the body, some but not all of the ribs, the sternum, clavicles, scapulae, cervical vertebra and the arms, were found in the middle and upper portion of the burial but disarticulated and deranged. The skull had been placed next to the pelvis beneath the right foot while the mandible was found under the sacrum. Traces of ashy material were found on the pit sides and the reader will perhaps be able to see in Plate 16 in the overlying stratigraphy a large intrusion that barely failed to reach Burial No. 34.

Burial No. 46, seen in Plate 17, was interred in a 1.1 foot deep sub-mound pit. The remains were those of an adult female placed on her back with the head turned and the arms and legs flexed to the left. No grave goods accompanied the burial. The left metatarsals were fused and the right humerus, tarsals and metatarsals were missing from the burial. The lack of the right humerus is not easy to explain inasmuch as the elements of the lower arm were complete, articulated and in such a position as to indicate that the entire right arm, including the humerus, was intact at the time of burial.

Burial Nos. 55 and 56, an adult female and male respectively, had been placed together back to back in flexed position on the original ground surface and covered with 3.2 feet of fill. The female, No. 55 at the top of Plate 18, lay on her right side with legs and arms flexed. The hands were missing and parts of the legs rendered black and fragmentary by burning.

Burial No. 56, the second interment in this double grave, was flexed like the female but lay instead on the left side, facing south. The male was complete and nowhere burnt. At the base of the skull of this individual, seen in Plate 19, were a cluster of 41 shell disc beads, many, if not all, of which appeared to have been strung. A fossil coral (probably a Devonian *Fauosites*), a complete turtle carapace (one of the Painted Turtles, genus *Chrysemys*) beneath which was the broken shank of a bone fishhook, a bit of ashy material (wood remains), and a flint chip were found at the rear of the skull. In front of the face, the fragmentary skull of a mink (*Mustela vison*), several small broken plates of turtle carapace, two flint chips and a portion of the beak of a loon (*Gavia immer*) had been placed on the original ground surface. About six inches from the face, on the same level, a small sherd was discovered with a trace of St. Lawrence Pseudo Scallop Shell type stamping on the exterior and a channelled interior (Plate 20).

Burial Nos. 57, 58 and 59, in Plates 21 and 22, had been buried together slightly more than two feet under the surface. Burial No. 57 was an adolescent lying face-up with arms tightly flexed at either side and the

right leg extended from the hip with the lower leg tucked back beneath the femur. Owing to an intrusion above the burial area, which had disturbed the entire earth cover over the grave, parts of the pelvis and the entire left leg were no longer in place and represented only by broken fragments scattered in the eastern portion of the area.

A secondary infant, Burial No. 59, had been placed on top of the right rib cage and arm of Burial No. 57.

Burial No. 58, the third member of the group, was evidently a partially disturbed secondary interment. The skull of this juvenile was found on top of the tightly flexed left leg and foot surrounded, on three sides, by the articulated right leg and foot and most of the left arm. Sundry other disturbed and/or disarticulated parts occurred in the grave area.

Burial No. 60, a partly flexed juvenile, was encountered in a deep (1.8 foot) sub-mound pit slightly more than five feet below the surface of the mound. Considerable ashy material occurred over and around the burial and, among the left ribs, was a trianguloid blue-grey flint projectile point 56 mm. in length (No. 1 in Plate 23). It could accurately be described as a cache blade.

Burial No. 61 was a highly fragmentary adult burial just a foot beneath the mound surface. The remains showed overall partial cremation which must have been accomplished *in situ* judging from the primary arrangement of the burial, although charcoal and ash were not abundant in the area. Slightly below the burial in the pelvic area were three copper foil beads (No. 2 in Plate 23).

Burial No. 62 was discovered in fill a little more than a foot and a half below the mound surface in a thin layer of charcoal and charcoal-impregnated earth. This was a severely burnt, partly flexed infant, the excavation of which was complicated by the extremely delicate nature of the fired bone fragments and the powdery softness of the surrounding black charcoal-laden fill. A total of 370 whole and 24 fragmentary beads, probably of marine shell, were encountered in the neck region and appeared to be strung in a necklace of several strands; in fact, fragments of charred cordage were recovered from perforations of the beads which were of the large and small disc and barrel variety (No. 3 in Plate 23). Concerning the cordage, Volney H. Jones, University of Michigan, has submitted the following detailed report (personal communication) for which the writer acknowledges indebtedness:

The fragments of cordage are composed of two strands, each twisted individually in a counterclockwise direction, and then twisted together in the reverse or clockwise direction. This indicates that the cordage was made by rolling the materials on the thigh under the palm of the hand, rather than spinning with a mechanical device. This was the customary method in the Great Lakes area in manufacturing cordage from basswood inner bark and other similar materials.

The general texture and aspect of the plant material constituting the cordage is suggestive of inner bark from some woody plant. Basswood bark is most likely, but we cannot certify that this was the precise material.

The cordage is in some places heavily coated with some organic material which in charring bubbled freely, leaving a porous structure.

Also in the neck area of the burial charred remains were recovered which Jones has identified (personal communication) as:

. . . a carbonized 'seed' or pit of the Canada Plum, *Prunus nigra* Ait. After considering all possibilities, we feel quite secure in the specific identification. The pit had been perforated, apparently for attachment or stringing.

Burial No. 63 had been included in fill 2.5 feet below the surface and may be described as a semi-articulated secondary burial. Some leg, arm, rib and vertebral elements were joined but other parts disarticulated.

Two and one-half feet deeper, or a total of five feet below the surface, Burial No. 64 was found in a pit beneath the mound. This adult male individual rested on the right side in a flexed position under a covering of wood remains that extended also more than five feet to the east (Plate 24). While it is quite possible that the wood was the remains of some structure, an obvious explanation for the feature does not come to mind. The writer is further indebted to Volney H. Jones for his analysis of this material about which he has written (personal communication):

The wood is quite heavily impregnated with calcium salts which obscure any structure which the wood may have. On solution of the salts with HCl, the wood tends to fall apart so that cell structure and pattern are not evident. Our impression, which we are unable to validate entirely, is that it is wood (rather than bark) from a coniferous tree.

In the knee region a large ground stone implement was found that might be called a double-bitted adze or pick although it is unlikely that it had any utilitarian function (Plate 25). The object is just short of one foot in length (300 mm.), between 50 and 60 mm. in the breadth and height dimensions and plano-convex in profile outline. It is made of a fine grain schist and weighs three pounds 15 ounces (Plate 26). A distinct resemblance is noted with objects from the so-called Intrusive Mound culture of Ohio. At the edge of the pit, two feet southeast of the burial, two mussel shells with the epidermis or periostracum still intact were collected from the old ground surface and the writer is in the debt of Dr. Henry van der Shalie of the University of Michigan for his identification of the specimens (personal communication) as the species *Elliptio complanatus* Dillwyn, which was also the most common mussel in the nearby shell midden. A few very small rodent bones were found in the region of the legs, some lumps of charcoal were taken from beneath and south of the burial and, in the latter place, an exterior-wiped, interior-channelled body sherd was recovered.

Artifacts in Fill (Plates 27-30)

In addition to the artifactual material which accompanied burials, enumerated above, there was a small quantity of ground and chipped stone and bone objects which occurred at random throughout the fill of the mound. Similarly, a modest series of sherds was recovered from the carried earth. Following is a brief description of this material.

Ground Stone (Plate 27)

Five adze fragments were encountered in the fill, four of which are illustrated. Most of these specimens, like ground stone implements from all

features of the site, are commonly made of what is known popularly and geologically as greenstone, a fine grained metamorphic. The largest fragment illustrated is 134 mm. in length and the shortest, a bit fragment, is 71 mm. long. One fragment of the corner of a polished slate piece was taken from the excavation in the western end of the mound. It exhibited smooth surfaces and had been notched along the preserved edges and although the fragment is too small to allow an identification it evidently was an ornamental piece, perhaps a small gorget.

Chipped Stone (Plate 28)

Only two complete projectile points were found in the entire mound fill and one, of grey flint and side-notched, was taken from a disturbed area. The other complete point was a large (86 mm. long) trianguloid point made of a fine grained green quartzite. In form it duplicates what Ritchie (1944) has called trianguloid cache blades found with certain New York burials, as at Rene Menard No. 1 or Oberlander No. 2 for example. Parts of four other projectile points were found but were damaged to such an extent as to be of little analytical use.

One scraper of the thumbnail variety came from the surficial zone (humus) of the mound.

Bone and Antler (Plate 28)

Associated with a large mass of charcoal in the west end of the mound were two bird bone pins, each cut diagonally to a sharp point at one end while some attempt evidently had been made to cut a groove in the opposite end.

Three antler pieces were recovered, all from the backfill of old intrusions, including a splinter awl, a socketed handle and an unmodified tine.

Other miscellaneous findings in the fill of the Serpent Mound included the burial of a medium-sized dog (*Canis familiaris*), in canine equivalent of a tightly flexed position, from near the south edge of the mound in and under the original ground surface below 1.7 feet of fill.

At another point on the old surface a pile of mussel shell fragments was uncovered at 2.3 feet beneath the mound surface that have been identified as the same species as composed the shell midden.

During excavation in the west end of the mound an extensive concentration of charcoal was encountered in the fill at about two feet beneath the surface and one and a half feet above the original surface beneath the mound. It was from this area that the two bird bone pins and polished stone piece, mentioned above, were recovered. The charcoal mass, not entirely uncovered, extended through two excavational squares in an area of about two and one-half by nine feet and except for the lack of evidence of firing in the surrounding fill, it would be suggested that this was the remains of several logs or a section of a tree burned at this spot. A portion of this material was collected for C14 dating (sample number M-1105) as detailed in Chapter VII.

Pottery (Plates 29 and 30)

The ceramic analysis of the Serpent Mound, like that of the other mounds, recognized two major provenance categories for sherds, namely, the mound

fill and the upper six inches (the humus or surficial zone), in order to ensure an accurate interpretation of, particularly, the Late Woodland sherds in the collection. In no case in this or the other mounds were Late Woodland sherds discovered, in undisturbed areas, below the surficial zone. It was therefore concluded that the Late Woodland material found its way into these structures by a process of natural accident subsequent to construction of the mounds and are not otherwise related. Similarly, a number of more or less modern objects, bottle caps and the like, were occasionally found in the humus covering the mound.

In the Serpent Mound, analysis of the ceramics was also conducted in three horizontal units, the excavation in the east end of the mound regarded as two adjoining units and the examination nearer the western end as the third. Comparative seriation of the Vinette ware in these three sections revealed no significant differences; in any event, the small size of the sample allows for only slight confidence in such comparisons.

A total of 94 identifiable sherds occurred in the Serpent Mound, including eight Late Woodland specimens. In addition, a large group of aberrant sherds of Vinette character, apparently from one vessel, were recovered and are discussed in Chapter VI (Plate 29). Eight sherds of Late Woodland origin were taken from the surficial or humus zone covering the mound and are discussed in a later section devoted to Late Woodland ware. Eighty-six sherds in the fill were recognized as to type while an additional 68 with exterior dentation and interior channelling or striation are shown, in Table 3, as unidentifiable Vinette 2 ware. The Vinette Dentate, Vinette Complex Dentate, Point Peninsula Rocker Stamped and St. Lawrence Pseudo Scallop Shell (Plate 30) types were present in about equal percentage while incised, plain or corded material was in the minority.

The limited series from the Serpent Mound is seriationally most like Wickham site in New York (Ritchie and MacNeish 1949: Figure 42), the principal differences being the greater percentile quantity of St. Lawrence Pseudo Scallop Shell in the Serpent Mound and the presence at Wickham of the early Vinette 1 type and the later Wickham types which were completely lacking in the Serpent Mound. It must be emphasized, however, that the small size of the Serpent Mound sample makes comparison tenuous.

Exploratory Trench

An exploratory trench was dug to the south of the Serpent Mound, as shown in Figure 2, in an attempt to discover any materials or, especially, structures which might exist adjacent to the mound group. A total of 240 feet of trench was dug (600 square feet of area), two and a half feet wide and one and a half feet deep on the average into sterile hardpan subsoil.

For the amount of area uncovered, so close to the heavily used mound group, surprisingly little was recovered. No evidence whatever of structural remains was noted and only a small artifactual collection retrieved. Most of the material was found in the sod, up to six inches in depth, while a very few pieces came from as deep as nine inches below the surface. Most of what little was found was typical of the refuse encountered elsewhere over

the site: bone fragments, flint chips, mussel shell fragments and small sherds. Notable exceptions included a small (75 mm. long) ground greenstone adze and two end or thumbnail scrapers made of blue-grey flint. The meagre ceramic yield was clearly of a Vinette character but fragmented to such an extent that typological treatment was unwarranted. Examples of complex dentate and rocker stamping, however, were noted on some sherds, most of which exhibited interior channelling or striation.

2. MOUND G (Plates 31–34)

Mound G is the most northeasterly structure of the group and is located roughly between 35 and 65 feet in that direction beyond Mound F. It is not large (30 feet in length along the NE-SW axis and 19 feet in width), very shallow and could be easily overlooked as it apparently was by Boyle if we may judge from his failure to mention it. In the 1960 field season, in addition to other excavation and survey activities, a 10- by 30-foot trench was extended through this mound and three test squares dug adjacent to it. Work commenced by surveying a grid of twelve five-foot blocks across the short axis as is shown in Figure 2. Because the placement of the excavation area across the short axis (the most logical approach in the time available) did not allow alignment of the Mound G grid with that prevailing elsewhere in the group, the blocks therein were not regarded as part of the regular system and were assigned separate designations.

Structure

When excavation was completed, it was abundantly clear that Mound G was much like Mound I, examined in 1957 and 1958 and described below, in both structure and content. These two shallow mounds covered sizable pits containing multiple primary and secondary burials but produced little in the way of artifactual materials. The oval shaped pit below Mound G had been dug slightly over two feet deep into the subsoil (hardpan), had an average width of four feet and extended in length for an estimated 13 or 14 feet in a northeast-southwest direction, the orientation of the long axis of the covering mound. The full length must be approximated because the pit was not completely uncovered; the excavation that exposed the northeastern end and most of the rest of the feature did not extend the full length of the pit area. Nine and one-half feet of the burial pit were exposed in the section excavated. The position of the old surface beneath the mound was not well revealed in the earth profiles exposed but a dark layer in the northeast wall of the excavation represented the original sod level. This dark lens was some 14 inches below the surface at the crown of the mound and that is, then, the maximum height of the mound fill. The carried earth consisted of unstratified brown loam that was, with the exceptions noted below and the usual small quantity of miscellaneous refuse, devoid of cultural material.

Burials (Plates 31–33)

A total of at least 18 interments were recovered from the pit beneath

Mound G.* One-third were primary while the remainder were disarticulated, incomplete and/or disturbed. The majority (15) were mature individuals. In general, but to a less marked degree than in Mound I, there was a tendency for primary burials to fill the lower portions of the mass grave while secondary interments occurred above (all Mound G burials are summarized in Table 4). As excavation proceeded, the first indications of the burial pit and its contents were revealed one and a half feet below the central crest of the mound where Burial Nos. 109-113 were uncovered. Burial No. 109, an articulated infant, had been included with four adult bundle burials as the uppermost contents in the grave. These individuals were uncovered, photographed (as in Plate 31) and removed in order to allow access to additional burials at a lower level in the pit. Plate 32 illustrates the placement of some of the individuals exposed at a shallow depth beneath the crest of the mound. Note here and in Plate 31 the distinct dark earth fill of the burial pit in contrast to the adjacent light grey hardpan subsoil. Plate 33 shows the individuals placed on the bottom of the pit after removal of the earth fill and overlying burials. In the lower left (north) corner of the grave in this view is Burial No. 116, an example of a partially flexed primary adult interment. In the right foreground in the pit is Burial No. 120, one of two adults placed face down on the floor of the grave, at a depth of about three feet beneath the surface, with the lower legs flexed sharply. In the case of Burial No. 120, the lower legs were flexed anteriorly, or the "wrong way" anatomically, bringing the feet beneath the pelvis. The southwestern portion of the grave, as excavated, was found to have suffered intrusion as witnessed by the scattered and highly disturbed bone fill in this area (on the right in Plate 33). Burial No. 122 therefrom, for instance, is simply a collection of the infant bones recovered from the excavational block spanning the area. Similarly, Burial Nos. 123 and 124 were recognized only from scattered and duplicate parts gathered from this end of the grave.

Artifacts in Fill (Plate 34)

A modest collection of various objects was recovered from the fill of the mound but none could be associated with burials as grave goods although some miscellaneous refuse (flint and quartz chips, mussel shell fragments, etc.) and a few sherds were taken from amongst the bone fill of the sub-mound pit (Plate 31). Excepting the sherds and refuse from the grave area, discussed below, all material worthy of mention was found in the surficial or humus zone of the mound.

The sod overlying the grave area produced a broken gorget of a green slate-like material pictured in Plate 34. It was 51 mm. in width and 79 mm. in length (to the break) with roughly parallel sides and a rounded end. At what has been surmised to be the centre of the piece were two biconically drilled perforations along the long axis on either side of which, on both faces of the gorget, shallow and somewhat irregular grooves or flutes had

*The number of burials designated in the field is regarded as minimal; additional individuals will probably be found by laboratory analysis of the secondary and disturbed remains.

been ground. Though not abundant, similar pieces have been reported by Ritchie (1944) for Point Peninsula burials in New York.

Not far from the gorget, and still in the sod, a thin 61 mm. long object was found that probably served as a projectile point. It was formed of a schist fragment showing modification by grinding at the tip (number 7 in Plate 34).

On the northwestern periphery of the mound a secondarily chipped flake scraper (Plate 34) of grey flint was recovered a short distance below the surface and nearby a handful of pieces of the mineral tremolite were encountered which may or may not have been intentionally included in the mound.

Material from Test Squares (Plate 34)

During excavation of Mound G, three five-foot blocks were dug about 25 feet southeast of the mound (see Figure 2). The northernmost of these test squares produced, from a five-inch depth at the bottom of the humus, a fragment of a cylindrical soapstone pipe bowl with a distinct collar or enlargement at the lip of the bowl, a Middle Woodland characteristic. The middle square, in the row of three, contained in the sod a grey side-notched quartzite point 60 mm. in length and 21 mm. in width which, if anything, is reminiscent of Laurentian forms. Nearby a small (29 mm. long) straight copper pin was found. These items are shown in Plate 34.

Pottery (Plate 34)

Twenty-seven Vinette 2 (and 11 unidentified Vinette 2) sherds were recognized typologically in the collection from Mound G. A quantity of Late Woodland sherds from four vessels were also encountered, in the humus zone in one excavational square, and are described in the section headed Late Woodland Ware in Chapter VI. As shown in Table 5, the Vinette examples were equally distributed in the sod layer and in deeper levels of the mound fill. Point Peninsula Rocker Stamped sherds were the most common while Vinette Dentate, Vinette Complex Dentate and St. Lawrence Pseudo Scallop Shell types were less abundant but prominent in the limited series. A number of sherds, together with flint and quartz chips, mussel shell fragments and an unidentifiable bird bone, were recovered directly from the mass grave area, a few of which are indicated in Plate 31 by the small white arrows, including, significantly, one of Vinette Complex Dentate and four of Point Peninsula Rocker Stamped type. Three dentated but untyped Vinette sherds, one corded and three comb- or brush-marked body sherds were also found in the pit. Typically, the bulk of the Vinette ware exhibited interior surfaces that were channelled or striated. It may be noted that the large numbers of exterior corded and interior smooth body sherds tallied in Table 5 for the surficial zone of the mound are parts of the four Late Woodland vessels described elsewhere.

The small size of the Mound G ceramic sample makes seriation comparisons both difficult and untenable. Within the site, however, it can be seen to resemble most closely the series from the Serpent Mound (Mound E) and to compare less closely to the lower levels of the shell midden.

The relatively high percentage of Vinette Dentate and the absence of the Rice Lake Banded and Point Peninsula Corded types in Mound G distinguish it from the midden collection. Although comparisons with other sites would be tenuous at best, some reasons may be found, especially if the series is regarded as a part of the large sample from the entire site, to contend that the Mound G ceramics are on a general Wickham site level.

3. MOUND H (Plate 3)

All that is known of this structure is contained in the following excerpts reporting Boyle's observations in 1896 and the results of trenching the mound in 1955.

Boyle noted that:

The mound referred to as lying almost due north of the serpent's tail is distant a hundred and thirty-six feet [modern measurement places it about fifteen feet nearer the Serpent Mound], its axes measuring thirty-three feet east and west, and twenty-eight feet north and south [cf. recent measurements of 34 by 35 feet], but as this work has been completely gutted, the dimensions given may exceed the original size, for no doubt much of the earth now on the outside was thrown from the excavation. In any event, the original condition is so utterly destroyed that not much attention was paid to it (1897: 24).

Adams records, concerning Royal Ontario Museum work, that:

An east-west trench fifteen squares long was excavated through Mound "H" during the 1955 season [squares were 5 by 5 feet]. This mound was known to have been extensively looted in earlier years, and was chosen for preliminary excavation in order to obtain a preview of soil conditions within, and adjacent to, the mounds. The trench was excavated from both ends simultaneously, and was so oriented that it would commence well outside the mound limits. The west end was designed to bisect a north-south line of demarcation thought to represent the dead furrow of a ploughed field on the slope immediately west of the mound. This proved to be a correct supposition and eliminated any possibility of its being an archaeological feature. The area of disturbance toward the centre of the mound indicated that the pit dug into the top of the mound by relic hunters had been quite large. Human bones were found in this earlier backfill, proving that burials had been encountered and shovelled out. Evidence was also obtained that this pit had been utilized in recent years as a duck-hunters' blind. Prolonged extensive groundhog activity was noted throughout the mound section of the trench. A minimal amount of cultural material was recovered, none of it of any diagnostic value (1956: 16).

4. MOUND I (Plates 35-39)

The fourth mound examined lies immediately south of the eastern end of long Mound E and, like Mound G, was low and inconspicuous. When overgrown with grass it appeared as no more than a slight ground swell, which fact no doubt accounts for Boyle not recording the feature in 1896. Mound I was nearly oval in plan, 34 feet in length (NE-SW), 23 feet across the short axis with a maximum height of about 1.5 feet.

Exploration, covering some 425 square feet of area, was begun during the 1957 field season as a southward extension of excavation being carried

on in the east end of Mound E. Discovery of the central mass grave beneath Mound I, partially uncovered in Plate 35, delayed progress to the extent that it was necessary to postpone completion of the work until the following year. At the end of the second field season the mound had been thoroughly investigated and the entire burial area, containing 29 individuals, uncovered.

Structure

The common grave covered by Mound I extended beneath the long axis for a distance of 21 feet. The initial interments had been placed in a long pit dug into the subsoil hardpan to varying depths up to a foot below the old surface. The bone content, heaped in the grave in a seemingly random fashion, more than filled the trench and extended in most sections up into the mound fill. The width of the burial area generally was three or four feet but presented, like the depth dimensions and overall plan, an irregular configuration.

The covering mound was composed of brown loam that contained, like the carried earth in all of the mounds, trace amounts of refuse such as charcoal, mussel shell fragments and flint chips. Mound I closely approached a condition of artifactual sterility in producing only a single projectile point, 18 identifiable Vinette 2, four Late Woodland and 30 body sherds. Again, as in other mounds, the old surface could not be discerned in the shallower peripheral sections, owing to soil weathering it is thought, while a disturbance of moderate severity in the none-too-deep central portion did not serve to clarify its position there. However, scattered bits of evidence detected in various earth profiles and other internal features allows it to be stated with confidence that the structure had a maximum height of about one and a half feet.

Burials (Plates 35-38)

At least 29 burials were encountered in the central grave in Mound I, 23 of which were secondary (Table 6).^{*} About one-third were immature individuals. With the exception of Burial No. 32, the primary burials were located at the bottom of the grave pit, establishing a pattern suggested in Mound G. In addition, the primary interments exhibited a characteristic position involving the tight flexing of the lower legs. Burial No. 24, from the bottom of the central portion of the mass grave, was extended on the back with the lower legs flexed back beneath and to the right side (partly visible in Plates 36 and 37). Burial No. 16, face down with the lower legs sharply flexed back, had been placed over No. 24 (Plate 36). Nearby, on the floor of the burial trench, Burial No. 22 was found face down with the lower legs flexed and lying parallel to the femurs. In the southwestern end of the grave, Burial No. 45 was found in the lowest level extended face down with the arms tucked in close to the body bringing the hands next to the skull, and with the legs extended from the pelvis but tightly flexed at the knees so that the feet were over the pelvis. Burial No. 37,

^{*}The number of burials designated in the field is regarded as minimal; additional individuals will probably be found by laboratory analysis of the secondary and disturbed remains.

immediately above, had been placed in the same position except that it was lying on its back, legs flexed underneath, with the head over the knee region of No. 45. Burial No. 32, from the northeastern end of the grave area, was characteristically positioned on the back with the right lower leg flexed back; it has been regarded as a primary interment in spite of the fact that the left leg had been separated from the pelvis and lay, itself articulated and tightly flexed, across the lower thoracic region.

The 23 secondary interments were arranged generally above the articulated individuals in a complex mass shown in Plate 38. Skulls and long bones seemed the most common remains among these incomplete interments. Some appeared to be bundle burials (as Burial No. 39 in Plate 37) while the disarticulated remains of other individuals (as Burial No. 23 in Plate 36) had been scattered in various sections of the grave. Needless to say, this practice made excavation tedious and the assemblage of individuals an arbitrary matter.

Finally may be mentioned a total cremation (Burial No. 40) from the northeast end of the grave. It was the only complete cremation encountered anywhere at the site; four primary partially cremated individuals were discovered in Mound E. No. 40 (Plate 37) consisted of small fragments of calcined bone arranged in a pile in a shallow basin dug into subsoil at the bottom of the grave. No charcoal or ashes were found with or near the remains, indicating their secondary nature. The only sizable fragment, a portion of a vertebra, established the remains as those of a child.

Artifacts in Fill (Plate 39)

This section may be very brief as a single projectile point comprised the entire non-ceramic inventory. It was a side-notched point, made of blue-grey flint, 33 mm. in length with a maximum width of 20 mm. It was found in mound fill 0.7 feet below the surface not far from Burial No. 32 in the northeastern extent of the mass grave. Typologically it fits with the Vinette ware recovered.

Pottery (Plate 39)

The ceramic sample from Mound I is chiefly distinguished by its small size: a total of 18 typed Vinette 2 specimens and 30 body sherds from various points in the mound. Four Late Woodland sherds from the sod layer formed the reconstructed rim of a vessel described in the section devoted to Late Woodland ware.

Some notice may be made, however, of the presence of two sherds of the proposed new Vinette 2 banded pottery, the only occurrence in a mound at the site; detailed discussion of the Rice Lake Banded Type may be found in the Ceramic Analysis section entitled "Vinette 2 Ware."

Of the Vinette sherds, nine examples of Point Peninsula Rocker Stamped comprise half of the sample. Chiefly because of the high percentage of this type and the presence of two Rice Lake Banded sherds, the Mound I series appears to correspond most closely with that from the shell midden. It may be added that the sherds shown in Table 7 from the fill of the mound were recovered principally from the mass grave area.

IV *Habitation Areas*

1. SOUTHWEST OF THE MOUND GROUP (Plates 40-45)

Excavation was undertaken in an area about 150 feet southwest of the western end of Mound E (or approximately the same distance and direction from Benchmark No. 3, largely in the southern half of grid subdivision C14a) owing chiefly to the persistence of oral reports of material encountered there by casual digging in the past. There were no surface indications suggesting buried features or material but a dead furrow extending in a north-south direction between the mound group and this area revealed that it had once been cultivated. In spite of the resultant overall disturbance of the surficial layer, 925 square feet of excavation in the area (Figure 2 and Plates 40 and 41) in 1960 proved it an important and productive one in the history of the site.

Features (Plate 41)

As noted, the area had been ploughed, unlike other sections of the site excavated, and consequently the upper level of the earth profile showed characteristic mixing. The excavation was carried, excepting in two refuse pits, to a depth of about one foot to sterile subsoil. Nearly all of the material recovered, again excepting the pits, came from the disturbed upper six inches although it is doubtful that any significant loss of directly related data can be attributed to the fact.

The pits, shown in Figure 5, were also of course ploughed superficially but below extended undisturbed into subsoil up to two feet beneath the surface. The smaller pit shown in Figure 5 had a maximum depth of 15 inches while the larger, 3.5 by 4.5 feet in dimension, was nearly two feet deep. Both were filled with a very dark (black) earth that appeared to be the result of both firing and organic decay. Refuse in the pits was relatively heavy including pottery; 32 typologically identifiable sherds were taken from the smaller and 42 from the larger pit exclusive of greater numbers found in the overlying plough zone. Although the *in situ* pit sherds comprise about one-quarter of the total from the excavation in this section, the general distribution of the remaining ceramic samples in the top soil throughout the area, in company with lithic and other material, suggests that the artifactual refuse was not once confined only to the pits but scattered in the immediate vicinity centring around the pits. Charcoal fragments, flint chips and many bone fragments (deer), often burnt, occurred in the fill of the pits. In the larger, from below the upper disturbed layer, in addition may be mentioned drill and blade fragments, mica fragments and an antler point. Further data relating to the ceramic contents may be found in the section dealing with the pottery.

Figure 5 shows nineteen postholes in the vicinity of the larger pit as they were discovered immediately beneath the plough zone. They ranged from two to seven inches in diameter, being on the average five inches. The postholes were about nine inches deep from the surface, but with the

upper six inches or so destroyed by ploughing, they were only evident in the excavation for a vertical distance of two or three inches. Filling consisted of dark earth, not so compact as the surrounding loam, as can be seen in Plate 41. There is no direct or conclusive evidence bearing on the origin of these postholes, whether prehistoric or recent. If aboriginal, they are doubtless contemporary with the pits and refuse of this area, as no evidence whatever was discovered to suggest more than one occupation here, but no clear functional interpretation of the pattern comes to mind. Nor did the discovery of a drill in one posthole, or a projectile point in the fill of another, eliminate the possibility that they are recent. If one were to speculate, it might be considered suggestive that the postholes appear to cluster around two sides of the large pit (the north and west generally) in a pattern that could have been useful for racks or a windbreak structure.

Burial (Plate 42)

A single burial (No. 108) unaccompanied by grave goods was encountered in the area excavated southwest of the mound group at the point indicated in Figure 5. As is evident in Plate 42, this individual was in a very poor state of preservation in consequence of the shallow depth of burial just beneath the plough zone (deepest part of the grave was 10 inches below the surface). The deteriorative effects of weathering and root action (note the grass rootlets in the plate) apparently may be held responsible for the fact that the less dense bones of the body were not preserved while remaining parts were highly fragmented. Present, but much damaged, were the skull, a few pelvic fragments, parts of pairs of humeri, femurs, tibiae, fibulas and a small quantity of unidentifiable fragments. The remains lay in loam immediately below the topsoil (plough zone) and shortly above the hardpan subsoil in a flexed position (it might be called a remnant primary burial) and although no supporting stratigraphic evidence was preserved, having presumably been destroyed by weathering, the individual had no doubt been placed in a shallow pit.

In general, rather than specifically, the pattern of this burial may be compared with those at the Kant site (Emerson 1955), particularly Burial No. 3 there.

Artifacts (Plates 43-45)

A number of objects were discovered in this habitation area in, most commonly, the plough zone. In the following descriptions that is the provenance unless noted to the contrary.

Ground Stone (Plate 43)

Two complete and six fragmentary pieces of ground stone implements were recovered. One was a 146 mm. long by 43 mm. wide gouge, approximately cylindrical in section, made of fine-grain schist with a 67 mm. long groove tapering back from a relatively thin bit. The second complete piece was a 150 mm. long adze or axe, from just beneath the plough zone, roughly finished overall except where ground smooth in the neighbourhood of the bit. It was made of the greenstone, as were the remaining six bit and

miscellaneous fragments, typical of the ground stone tools everywhere on the site. The gouge, however, is in a sense atypical as implements of this type are diagnostic of the Archaic Laurentian.

Chipped Stone (Plate 44)

Included in this category are two end scrapers of the same blue-grey flint found commonly on the site.

Seven drills, all broken to some extent, came from the habitation area; two were found in the loam beneath the topsoil and one at the bottom of a posthole. Three exhibit expanded bases while the remainder are shank and/or bit fragments.

Twenty chipped stone projectile points, of which 11 were complete and undamaged, were uncovered in the habitation area excavation (all from the topsoil except one in a posthole). The collection is characterized by its heterogeneity; the points range from 22 mm. to 64 mm. in length; the longest and shortest specimens, incidentally, shown at the upper left in Plate 44, were made of the same green flint while the others, excepting one of tan colour, were made of a bluish and/or grey flint. Similarly, the points show a diversity of form: eight stemmed, six side-notched, one triangular, one ovoid, one "tanged" (perhaps owing to lateral reworking of a side-notched form), one of cache blade shape, while two were damaged beyond classification.

Culturally the minority side-notched points and the blank or cache blade may be easily fitted into the Vinette picture but the overall character of the collection is Laurentian. Note the predominance of typically early stemmed points, one very large, and an asymmetrical specimen (bottom row in Plate 44) very like a group of early upper Ohio Valley and New York points called by Ritchie (1961: 42-43 as derived from Witthoft 1953) "Perkiomen Broad Points." To complete the picture, the isosceles triangular example could be Late Woodland or Late Prehistoric typologically.

However, the general nature of the collection is reminiscent of earlier Laurentian material which fact suggests, together with the ceramic testimony, an early position for this feature of the site.

Antler (Plate 45)

Two antler pieces were found; one a fragment of a worked projectile point tip. From the large pit, at a depth of one foot, several black fire-hardened antler fragments were recovered and reconstructed to form the 60 mm. long projectile point seen in Plate 45.

Copper (Plate 43)

Two copper pins occurred in the topsoil level; one 46 mm. in length and the other, if the bent tip were straightened, ca. 68 mm. in length.

Miscellaneous

In this category may be mentioned two small fragments of sheet mica from the upper level of the large pit.

West Shore Area Test Squares

The findings from two five-foot test squares considerably west of the mound group are included in this section because of marked resemblance to the habitation area material. The square most distant from the mound group was 655 feet west and 100 feet north of Benchmark No. 1; the nearer square 400 feet directly west of Benchmark No. 1. Both are located along the shore of Rice Lake as it meets the western side of the point; the square furthest west from the mounds (F19d 2-1) was within 15 feet of the water. They were referred to in the field notes as being in the "Picnic Area" because of their location in a section of the park furnished with fireplaces, tables and the like by the Department of Lands and Forests. Evidence in the test squares suggested that camping had also gone on here many centuries earlier but owing to the present use of the area it was not possible to fully investigate the prior occupation.

The test square nearest the mound group was dug to a depth of two and a half feet but contained no artifactual material below one and a half feet. Finds in the upper levels were scanty but included bone fragments, flint and quartz chips, a small fragment of a ground stone implement, a few small plain sherds and two of the St. Lawrence Pseudo Scallop Shell type.

Square F19d 2-1, at the water's edge, was much more productive. The earth profile in this test consisted, from top to bottom, of a thick dark topsoil layer fingering into a black loam level at a depth of 10 inches or more; the black layer varied between two and eight inches in thickness and was underlaid by a nearly sterile yellow-brown loam. The concentration of material in the so-called black soil would indicate that it represents an occupation level of some intensity although the view afforded within one five-foot test square is hardly adequate to form a judgement. Artifactual material was encountered from the surface downward to about one and a half feet and was most abundant in the lower black level. Many deer bone fragments, fish bones, and flint and quartz chips were scattered in the fill. Three fragments of ground stone adzes, presumably, came from the upper and lower levels while a side-notched blue-grey flint projectile point, No. 1 in Plate 44, 49 mm. in length was recovered from the lower black soil. Numerous plain and decorated sherds too small to be of analytical use were collected, again from the lower level, together with 28 typed sherds listed in Table 8. Nearly three-quarters of these occurred in the one to one and a half foot level in company with the bulk of the other remains. St. Lawrence Pseudo Scallop Shell was the predominant type followed closely by Vinette Complex Dentate. The ceramics will be discussed more fully in the following section.

Pottery (Plate 45)

The habitation area southwest of the mound group was second only to the shell midden as a pottery-producing section of the site. A total of 305 identifiable Vinette 2 sherds were recovered; unlike the mounds or middens, however, no late Woodland ceramics were encountered. Anomalous also, in comparison with the collections from other features, were the nearly equal quantities of decorated and body sherds; the latter numbered 327.

Ordinarily, of course, sherds of this ware category from the undecorated (surface-treated) portion of vessel bodies are much more numerous than those from the more restricted decorated zone. The ceramic analysis in Table 9 recognizes two levels, that is, the surficial plough zone and deeper sections which were contained entirely within two refuse pits in the area. No percentile distinction was noted in the vertical distribution of the three ceramic types found in both levels.

The salient feature of the sample is the relatively large amount (64 per cent) of St. Lawrence Pseudo Scallop Shell (four examples of which may be seen in Plate 45). Only half so abundant were Point Peninsula Rocker Stamped and Vinette Complex Dentate sherds occurring as, respectively, 17 per cent and 14 per cent of the sample. Remaining types formed a small part of the collection.

Placement of the series in the overall Serpent Mounds site collection hinges largely on the percentile occurrence of the three most common types which, for reasons presented below, indicate an early position for the habitation area in the sequence.

Seriation of the pottery types from the habitation area southwest of the mound group and those from the so-called West Shore Area, reveals a correlation with the Kant site (Emerson 1955), which is early in the reported Point Peninsula sequence in Ontario. Three areas of excavation at the Kant site produced significantly different ceramic assemblages which appear to represent distinct occupations (Emerson 1955: Fig. 10) and it is the older levels which show the greatest similarity to the early Serpent Mounds material. These series are characterized by relatively large amounts of Vinette Complex Dentate and St. Lawrence Pseudo Scallop Shell in association with other Vinette 2 types. In addition to established Vinette 2 ware, Emerson recognized an early variant which he named Kant Rectangular Dentate. Only 10 sherds resembling Kant Rectangular Dentate were encountered in the Serpent Mounds series (one in the Serpent Mound, four in the midden and five in the habitation) and they have been pooled, for reasons of stylistic comparability as discussed in a later section, with the St. Lawrence Pseudo Scallop Shell type. When the two groups at the Kant site are similarly viewed in combination, the seriation is essentially identical to that of the West Shore area (the "Hillside Hearth" at Kant is particularly comparable) and much like that of the habitation southwest of the mound group. The high percentage of St. Lawrence Pseudo Scallop Shell (64 per cent) in the habitation area southwest of the Serpent Mound exceeds the combined occurrence (46 per cent) of that type and Kant Rectangular Dentate at the Kant site, but, nonetheless, the two series are comparable (note especially "The Point" at Kant site). Unfortunately, no charcoal suitable for radiocarbon analysis was encountered in this section, requiring that its chronological placement rely entirely upon typological considerations.

Temporal Position

The assignment of temporal position for the habitation involves the problem of reconciling the ceramic and lithic assemblages which show, respectively,

Point Peninsula and Laurentian character. The discussion heretofore has proceeded as if the collection should not be viewed as the result of temporally and culturally divergent usage but rather as a Vinette 2 occupation retaining certain earlier lithic forms although there is no direct support for this contention; nor is there for regarding it as two discrete components. Faced with essentially the same circumstances in the lowest level of the nearby East Sugar Island midden, Ritchie concluded:

The physical stratigraphy at the East Sugar Island site suggests in part a discontinuous occupation in which people of the Point Peninsula culture played the major role. Their initial occupation may either have temporally overlapped with the Laurentian possession of the region, as manifested by the stone and bone hunting points of Laurentian type in the basal stratum, or less probably, these older vestiges were already present in the forest duff and became intermingled with the Point Peninsula remains. The Laurentian type artifacts are not sufficiently abundant to support the hypothesis of such a group's receiving a diffused Point Peninsula ceramic increment (1949: 21).

Does the postulated contemporaneity of the Laurentian and Point Peninsula occupation there imply an Early Woodland position, in part, for both? Ritchie does not elaborate but the conclusion is forced if his interpretation of the stratigraphy is valid. The ceramic sample from the habitation area at Serpent Mounds appears to show a comparatively early position, with reference to both other features at the site and to other components. The fact would tend to close the typological gap inferred for the lithic and ceramic materials. With these sundry considerations in mind, it is felt that the habitation area assemblage should be viewed as a single component occupation and that a late Early Woodland or early Middle Woodland temporal position would best comprehend the data so regarded. In this event, there is established the survival of early lithic forms in the later ceramic (Vinette 2) horizon. That this is an accurate reflection of events is also suggested at certain other Vinette 2 producing components in Ontario.

2 SHELL MIDDEN (Plates 46-55 and 61-72)

During parts of the 1957, 1958 and 1959 field seasons, excavation was carried out in the shell midden deposit along the shore of Rice Lake at the foot of the slope generally southeast of the mound group (Figure 2). At the conclusion of this work, the feature had been thoroughly examined, and considerable artifactual material recovered, especially ceramics, in the 2900 square feet of excavation (116 five-foot squares). Portions of the excavation may be seen in Plates 46 and 47.

In but one instance was any significant earlier excavation discovered, a backfilled block in Rows 37 and 38, while the area between Rows 45 and 55 was avoided as it appeared to have been disturbed previously—there is reason to believe that it was done in 1952. The midden area had evidently gone unnoticed by earlier investigators or had little appeal for them.

For commentary regarding the position of the midden in relation to the present and prehistoric lake level, see Chapter II.

Structure, Refuse Content and Occupance

Considering size alone, the shell deposit was rather impressive; excavation revealed it to extend in a continuous strip along the sloping bank of the lake with a maximum width of about 35 feet for a distance of approximately 300 feet (Figure 6). It is likely that these figures fairly well represent the overall dimensions.

Depth of the shell accumulation varied from slightly over a foot in the deepest sections, generally just lake-ward from the centre-line of the excavation, from which it diminished in thickness toward the periphery of the deposit. The stratigraphic sequence was uniform throughout although the thickness of individual layers (e.g., the shell) was variable. In general, however, it was found that sod and topsoil overlying the shell stratum averaged about four inches in depth (range: 2–12 inches) while the shell layer itself varied from a mere trace to a foot or slightly more in depth. The mussel accumulation rested upon a dark and usually thin earth layer (about an inch in thickness ordinarily but up to 6 inches in places) interpreted as the old ground surface, the lower part of which projected irregularly into and graduated with a sterile yellow sand below. The sand extended downward in most places for at least 18 inches, where gravel and rock occurred at an average depth of three or more feet below the surface. Views of midden stratigraphy may be found in Plates 48, 49, 50 and 51. The reader will note, however, in Figure 7 that ceramic material is shown to extend down to three feet below the surface; it should be pointed out that the total thickness of the shell and/or overlying ceramic-bearing levels alone were nowhere sufficient to account for such a depth. The material shown from below a depth of one and a half feet was recovered, as a rule, from peripheral sections of the midden, usually portions nearest the lake, that had been subject to some degree of burial as a consequence of erosion from higher on the slope (some idea of the steepness of the slope may be gained from Plate 50). In any case, this anomalous stratigraphy was not common as reflected by the fact that only 7.5 per cent of the ceramic sample shown in Figure 7 for the midden was recovered below a depth of one and a half feet. At the same time, these circumstances do not appear to militate against the chronological implications of stratigraphy (in fact, depth or degree of erosional cover may well be time-linked) or the seriation status of the deeper buried material.

The shell layer not only varied in thickness but also in what might be called texture. In certain sections the layer consisted of a dense deposit of shells only slightly damaged or in an unbroken condition. Here the layer was not consolidated and was easily dug with a trowel; it contained earth and/or ash lenses and little soil. In other sections, the shell was crushed, in small pieces in a more compact layer with a moderate amount of earth content. The variation in texture ranged in a continuum from almost exclusively shells, on the one hand, to finely crushed shell fragments in soft dark soil on the other. There was, in addition, an apparent correlation between thickness of the shell layer and the size of the content shell, the smaller shell fragments being found primarily in the shallow

areas while large pieces or whole shell generally composed the deepest deposits.

While refuse and artifacts were found throughout the deposit, as well as in the overlying sod and the old surface beneath, it is noted that the thinner, fragmented sections of the midden were proportionately more productive than where the shell was deepest and preserved in larger-sized pieces.

The impression was also gained that the interiors of the thicker sections of the deposit tended to be sterile with finds concentrated near the top and bottom of the layer often associated with the present and old sod zones respectively.

A speculative explanation for the apparent correlation of artifact abundance with the thickness, density and fragmentation of the shell layer would be that the areas of deepest deposit were shell dumps while sections of thinner more broken shell were those used most heavily or chiefly for occupation. On this assumption, the fragmentation of the shell and the abundance of artifactual finds may be credited to more intense use while adjoining areas, serving principally as dumps, were not trampled so thoroughly, leaving the shell and other material therein, notably pottery, in a less broken condition. Here also, as might be expected, the ceramic yield was relatively reduced compared to the sections of alleged more intense occupation.

With respect to the shells incorporated in the midden, Dr. Henry van der Shalie, University of Michigan, has submitted the following commentary (personal communication) for which the writer is most grateful:

The largest number of specimens are from the midden excavation with the 59/28 mark [the field specimen number]. Two species are represented in this collection: *Lampsilis siliquoidea* Barnes and *Elliptio complanatus* Dillwyn. The latter with 38 specimens is three times as abundant as the former with 12. This combination of species is about what one would find in the area. The failure of a species like *Anodonta grandis* may mean that these specimens were taken from a river or river-lake.

Further to the species *Elliptio complanatus* Dillwyn he remarked that:

This species is one with a tremendous range along our East Coast and through New England and then west through Canada and our U.P. of Michigan. It inhabits rivers and lakes and has an unbelievable amount of variation. The forms need study because it is clear that they do conform somewhat to ecological niches if we could learn something about the classification in terms of the niches.

Refuse and artifactual remains in the midden were confined to levels above the yellow sand mentioned earlier. Similarly, a number of features of a structural nature were seen in or above the old ground surface and consisted entirely of rather small earth and, especially, ash lenses; examples of the latter may be seen in Plates 48 and 49. In one instance, firing at the old surface level had produced sufficient charcoal to allow radiocarbon dating; the provenience of the midden sample (M-1104) is shown in Plate 49 and discussed in detail in Chapter VII. The common occurrence of ash in the midden suggests cooking of the mussels and/or opening and drying of the meat by exposure to heat.

Food bone refuse, although not recovered in great amounts, was not lacking in the midden; but when compared to the mass of shell it seems not a very significant part of the refuse. Both absolutely and relatively, deer bone was the most abundant and consisted very largely of long bone fragments broken as if for marrow extraction. Skull and thoracic parts were notably rare and the entire lot of deer bone recovered could be contained in not more than two bushel baskets. The nearly complete absence of antler as refuse or artifacts is suggestive of the time of year that hunting from this station may have taken place; we shall return to this and related points in a moment. One large bone awl had been fashioned from a bear (*Ursus americanus*) ulna, a species represented also by two canine teeth to be mentioned presently. The remains of smaller animals (rabbits, beaver, etc.) were not notably abundant. Fish and turtle remains were encountered with some frequency while bird bones were rare. It might be expected, speculatively, that the region would have been excellent for duck hunting, particularly if those birds were attracted to the wild rice which was once abundant in the lake.

It would appear on the basis of bone remains that only limited hunting and fishing can be demonstrated in the midden (implements for those pursuits were scarce as will be seen below) where, quite evidently, the emphasis was almost exclusively upon shellfish gathering.

Implication of periodicity of occupation may be drawn from the evidence for intensive shell collecting in the face of relatively little other food production activities—in other words, during occupation of the midden, it appears that the food quest was very largely confined to shell collecting. This being the case, it would seem quite unlikely that any use could have been made of the midden during the winter when the lake is solidly frozen over, effectively cutting off the supply. In addition, so great an accumulation of mussels as formed the midden could hardly have been gathered out of the shallows in a short, or continuous, span of time. To have used this collecting station only seasonally would, conversely, have served to conserve and allow perpetuation of the mussel population offshore and therefore prolong the utility of the bed.

The evident emphasis upon shellfish gathering becomes clearer after an inventory of the hunting and fishing equipment discovered in the midden. The listing of pertinent items in the following section is a short one indeed and, in fact, except for a number of projectile points recovered from the habitation southwest of the mound group, implements of this type were rare over the entire site.

And finally, the scarcity of antler might be taken to suggest that what hunting was conducted during occupation of the midden took place at that time of year when deer were not carrying antlers—during the summer. The rarity of duck bones would imply that the place was not in use when these birds must have been plentiful around the lake—in the fall. Because shell collecting would be difficult at best during the winter, the seasonal choice is narrowed to the spring or summer, of which the latter would seem the most suitable period.

The writer finds, then, no reason to suppose that the midden was

used on a full-time basis annually—nor, obviously, were the mounds. The evidence adduced in Chapter III indicates that the Serpent Mound was accumulated over a period of years. As the mounds and midden appear to be contemporary for the most part (a contention supported by evidence presented in following sections) it is rather easily assumed that activities centring around both the mounds and midden were conducted synchronously in the yearly cycle.

Artifacts (Plates 52–55)

It certainly cannot be claimed that nonceramic artifactual remains were common in the midden. The material on display in Plates 52–55, with the exception of five fragmentary pieces, is the entire lot. This paucity seems particularly remarkable in reference to the flint projectile points; only seven were recovered. It has been implied in the foregoing paragraphs that little reliance was placed upon food producing activities other than shellfish gathering, a conclusion supported by the scarcity of relevant implements and the lack of food bone refuse in the midden.

Ground Stone (Plates 52–53)

One complete and nine fragmentary adzes were found in the midden. They were typical of those found elsewhere on the site in being roughly formed for the most part and ground smooth at the bit end. Outstanding among the adzes was the largest, and only complete, specimen shown at the top of Plate 52. It measured 130 mm. in length with a maximum width of 64 mm. Like all other examples from the midden, it was made of a fine-grained metamorphic greenstone. This material is available within 100 miles to the north of the site where it is found in bedrock outcrops at the southern border of the Shield; otherwise it could have been picked up locally out of glacial drift.

Three fragmentary pieces of siltstone, two of which are pictured in Plate 53, were found in the shell layer; their surfaces and edges had been ground flat and smooth. A certain functional identification of these broken pieces is not offered although they may have been ornamental; it seems unlikely that they were abraders owing to their bilaterally smooth grooveless surfaces and uniform thickness.

Chipped Stone (Plate 53)

Excepting one projectile point, two flint spalls and the customary flint chip refuse, the entire collection of chipped stone implements is shown in Plate 53.

The seven projectile points, most of which were made of the blue-grey flint associated with all features of the site, roughly approximated one another in length and centred around 45 mm. One was made of quartz and, like the two other undamaged specimens, was side-notched. One roughly made point had isosceles triangular shape and two others, damaged, could have been either side-notched or stemmed. These specimens afford little comparative value.

The spall shown is one of three about the same size. A single end scraper is illustrated in Plate 53 (number 10) and the object shown as No. 9 has been identified as a strike-a-light. It could well be a reworked projectile point, judging from its form, but with the tip and sides ground smooth and blunt.

Bone and Antler (Plates 54-55)

All but one of the 10 bone awls recovered from the shell deposit are shown in Plate 54. The largest, on the right, was a 163 mm. long modified bear (*Ursus americanus*) ulna. Without exception, the others were of deer bone and most could be called splinters.

In Plate 55, all but two of the deer bone splinter pins from the shell are illustrated. They were shaped and smoothed, perhaps due in part to handling, and most appear to have been pointed at both ends although this is not certain due to breakage (only three were undamaged). Typical length was in the range of 75 to 90 mm.

What is identified as a drifter, of bone, appears in Plate 54 as No. 2. It had been smoothed overall.

Two unmodified antler tines were recovered, one of which appears in Plate 54.

Other antler pieces included two socketed projectile points, 60 mm. in length, shown in Plate 55.

At the upper left in Plate 55 are two harpoons from the midden. One, 90 mm. long with some fire damage on the tip and shank, had been worked down on all surfaces from a bone splinter. Eight unilateral barbs were preserved. It is typical of Point Peninsula types in New York. The second specimen exhibited bilateral barbs, eight on a side, and was 57 mm. in length. It was concavo-convex in section, being a portion of the dense outer layer of a deer long bone, and unmodified except around the edges.

A highly polished bone fragment of unknown use is shown in Plate 55 as No. 5. It was 33 mm. long, ground to an edge from both surfaces at the one curved "bit" end.

Miscellaneous (Plate 55)

At the lower left in Plate 55 are two small objects, one a thin bone fragment (No. 8) and the other (No. 9) a peripheral turtle scute, bearing notches along one edge. They are identified as pottery decorators and some of the variety of impressions one can achieve with these pieces are shown on the plasticene in the lower left corner of the plate.

It is possible that a beaver (*Castor canadensis*) tooth from the midden with some artificial thinning on the lingual surface at the biting edge could also have been used to mark pottery or served otherwise as an engraver.

Two bear (*Ursus americanus*) canine teeth (Nos. 6 and 7 in Plate 55) were recovered from the shell and the longer (68 mm.) had been drilled apically.

Finally, a few mica fragments were recovered from the shell layer.

Pottery (Plates 61-72)

If any one class of artifacts from the Serpent Mounds site was to be selected as especially important for the interpretation of cultural affinities, the choice would easily fall to the ceramic sample from the shell midden. Here a total of 3412 sherds was counted as follows:

	<i>Number</i>	<i>% of Total</i>
Identifiable Vinette 2:	1440	42
Unidentifiable Vinette 2:	258	8
Late Woodland:	38	1
Iroquoian:	6	.1
Bodysherds:	1670	49
Total:	3412	100

As was the case in the mounds, the Late Woodland and Iroquoian material in the midden occurred surficially. Of the 38 Late Woodland examples from the midden (2.5 per cent of the identified midden material), about half were contained in the topsoil layer of one excavational square, the remains of two vessels (Plate 71). This circumstance and the fact that the late material occurred in only minor amounts (3.5 per cent of the total site sample) surficially in various features, have led to the conclusion that it is to be disassociated chronologically and culturally from the remainder of the ceramics (Vinette ware). The Late Woodland material is discussed separately in the following section, as are the Iroquoian and bodysherds.

The 1440 typologically identified sherds from the midden, of which 215 or 15 per cent were rims, comprised 46 per cent of the Vinette and body sherds (Table 13) recovered there, exclusive of 258 untyped sherds regarded as Vinette ware on the basis of exterior dentates and interior surface striation or channelling. The 1440 identified Vinette sherds from the midden accounted, further, for 76 per cent of the total of that class of sherds from the entire site ($n = 1904$).

Because of the relatively large number of sherds found in the midden, as compared to other features, Chapter VI on Ceramic Analysis deals for the most part with midden materials. The reader is therefore referred to the detailed discussions and plates there, including those relating to the proposed type Rice Lake Banded, in addition to the commentary that follows below.

Among the Vinette ware in the midden, six established types were recognized and an additional group of 365 sherds assigned to a proposed type category, Rice Lake Banded, illustrated in Plates 68-70. The latter material formed one quarter of the identifiable Vinette ware from the midden, being only less abundant than sherds of the Point Peninsula Rocker Stamped type (Plates 65-66) of which 694 specimens, or 48 per cent of the total collection, were counted. The third most common type was Vinette Complex Dentate (Plates 62-63) with 123 sherds constituting nine per cent of the total. Following, in order of frequency, were

St. Lawrence Pseudo Scallop Shell: seven per cent (Plate 63); Point Peninsula Corded: six per cent (Plate 64); Vinette Dentate (Plate 61) and Point Peninsula Plain (Plate 67): (two per cent each). Six untyped incised sherds (.41 per cent) were also found (Plate 61). More revealing than their frequency in the total sample was the percentile arrangement of the types according to stratigraphic occurrence as shown in Figure 7. The reader is particularly referred in this connection to the previous section concerning structure of the midden.

The most striking trends are seen in the steady percentile decrease of Vinette Complex Dentate while material of the Point Peninsula Rocker Stamped type formed a greater part of the sample in each succeeding level from bottom to top with the exception of a moderate decline in the uppermost (sod) layer. Rice Lake Banded sherds exhibited a notable uniformity of frequency throughout the deposit, approaching in all levels the mean 25 per cent value. St. Lawrence Pseudo Scallop Shell and Point Peninsula Plain types were present in relatively constant amounts in various levels with the possible exception of the occurrence of the former type in the deepest buried part of the midden. Vinette Dentate, Point Peninsula Plain and the rare incised examples form only a small part of the collection and were associated with the upper levels.

The most obvious comparison for this series is with the material recovered by Ritchie from the midden on East Sugar Island, within view over a short stretch of water from Serpent Mounds (Plate 1). The stratified midden there produced, as shown in Ritchie 1949: Figure 5, Point Peninsula, Owasco and Untyped material, including 164 sherds (68 per cent of the sample) of Vinette ware of types present also in the Serpent Mounds midden. Comparing seriationally only those Vinette types present in both middens we find about double the percentile occurrence of Vinette Complex Dentate and Point Peninsula Rocker Stamped in the Serpent Mounds midden that was found on East Sugar Island. Similarly, there was much less Point Peninsula Corded at Serpent Mounds (it was a major part of the East Sugar Island sample) where incised material was very slightly represented and confined to the upper levels. The presence of Rice Lake Banded sherds on East Sugar Island is revealed in Ritchie's discussion of untyped material (1949: 12-18, 21) which included also, incidentally, what would now be called Glen Meyer ware (pp. 10-12 and Figure 3, c-e). Moreover, surface collections from East Sugar Island seen by the author contain sherds belonging in the Rice Lake Banded category. These findings, of course, demonstrate the relatedness, at least in parts of their sections, of the East Sugar Island and Serpent Mounds midden.

Various trends in the collections may be discerned and that involving Point Peninsula Rocker Stamped is cited in particular. On East Sugar Island the type is most frequent in the lowest level and diminishes markedly above. In the Serpent Mounds midden the type begins modestly in the lowest level and grows in prominence toward the top of the midden before a slight decrease. This tendency and similar comparisons evident in the two collections suggest equation of the upper portion of the Serpent Mounds midden with the lowest East Sugar Island levels. If this is a valid

judgement, the lower parts of the Serpent Mounds midden antedate the East Sugar Island occupation. That this is the case is further indicated by the presence in the East Sugar Island midden of later Point Peninsula Jack's Reef types and Owasco and later untyped material from all but the lower two levels. Ritchie correlates the lower two levels on East Sugar Island on seriation grounds with "... the middle Point Peninsula series in New York, as known from the Vinette 2 and 3 and Wickham 1 components" (1949: 22-23). The implication is, then, that the upper sections of the Serpent Mounds midden are on a comparable level and that the lower parts of the midden represent prior occupation.

V *Burial Pits: Numbers 1, 2 and 3*

In 1958 and again in 1959 and 1960, examinations were made of what proved to be mass burials in pits located north of the mound group roughly 170 feet distant from the eastern end of the Serpent Mound. Since the first season of work at the site these features had been known to the field party as a group of oval depressions generally about six inches deep and five or so feet in length but the nature of their content, or even that they were artificial, was not established until the initial investigation in 1958. That year Burial Pit No. 1 was excavated and produced a quantity of skeletal material but little in the way of artifactual remains. The following year another nearby depression, Burial Pit No. 2, was selected for excavation (Plates 56-58) with the same results. That year also a systematic survey was completed of about 60 similar depressions—some larger, some smaller—scattered at random throughout an area extending several hundreds of feet east and, especially, north of excavated Burial Pits Nos. 1 and 2. The next year, 1960, a third pit was opened, near the two excavated earlier (Fig. 8), and testing conducted in about thirty, or approximately half, of the depressions mapped the previous year. Not one of the depressions tested proved to contain burials or be of artificial origin. So far as could be determined, they were the result of removal of large rocks or stumps in historic times and could not be associated with aboriginal use of the area.

Burial Pits Nos. 1, 2 and 3, on the basis of the evidence presented below, are assigned culturally to the Late Woodland phase; it may be possible later, when the complex is better defined, to demonstrate a relationship to what is now known as the Glen Meyer tradition.

Structure (Plates 56-57)

The three pits exhibited a similar structure in being approximately oval in shape and two feet in depth below the existing surface. Length and breadth dimensions were revealed as:

Burial Pit No.	1:	5.5 × 4.0 feet
" "	2:	5.0 × 3.9 feet
" "	3:	4.5 × 3.7 feet

The earlier stage of excavation of Burial Pit No. 2 is shown in Plate 56 to exemplify the nature of the findings in all three of the features. Therein the reader may notice that the depression seen on the surface prior to excavation is indicated by the earth wall left standing across the pit for that purpose. On the floor of the excavation as seen in that view, on both sides of the wall, the dark pit fill is clearly evident. Plate 57 is the same view after removal of the wall and the dark earth fill to expose the bone content. It was clear that these burials had been made in pits dug to a depth of about two and a half feet into the subsoil hardpan. It is suspected that the pits were not completely refilled with earth as not much slumping of the fill, sufficient to produce the surface depression, may be credited to settling or organic decay of the secondary burials incorporated. That only a light earth cover was replaced over the interments was suggested by the presence of a heavy dark humus zone, deepest over the central portion of each pit, that appears to have accumulated by a process of gradual filling from the higher ground surrounding the pits.

Burials (Plates 57-58)

The skeletal content of the three pits, typified by Burial Pit. No. 2 in the plates, consisted entirely of secondary and incomplete burials. Not one instance of articulation was noted in the fragmentary and partial interments; only about half a dozen whole bones were found among the hundreds recovered. These structures, then, fully qualify for designation as ossuaries. For the same reason, it was not possible to recognize individuals so that it was necessary in the field simply to count and number skulls and associate with them whatever postcranial elements were nearby. This was an entirely arbitrary procedure to expedite collection and provenance recording which could obviously make no attempt to gather the remains of one individual under one burial number. Physical anthropological analysis of the material in the laboratory has produced some but by no means complete ordering of individual remains and has increased somewhat the number of individuals, as such, recognized in the field.

Burial Pit No. 1 contained primarily skulls, eight in number, and a few postcranial parts far short of the amount required for that many complete individuals (Burials Nos. 47-54). Burial Pit No. 2 produced a total of 24 skulls, and therefore individuals, as it was reckoned in the field, and other elements in a dense cover over the bottom of the pit (Burial Nos. 65-88). Some bone clusters appeared to have been bundled, and may therefore actually represent individuals, as was also the case with the 19 burials counted in Burial Pit No. 3 (Burial Nos. 89-107). In all three graves were the remains of persons of all age groups with a predominance of adults. A total of 51 burials was counted in the field from the three ossuary-like pit graves.

Artifacts (Plates 59-60)

Though osteological material was plentiful, artifacts were scarce in the pits; but it is very largely the artifactual content that allows the graves to be identified as of Late Woodland origin.

Ground Stone (Plate 60)

A single adze, in rather eroded condition, was found at the upper edge of Burial Pit No. 2; it was 101 mm. in length and made of greenstone.

Chipped Stone (Plate 59)

One projectile point, of a tan-coloured flint, was taken from Burial Pit No. 1 at a depth of almost a foot below the surface in the dark pit fill. It was side-notched, 42 mm. in length and 21 mm. in width at the base. Typologically, it would seem to fit Middle rather than Late Woodland but it is, at the same time, not like any other projectile point recovered at the site.

Animal Bone (Plates 59-60)

Faunal remains were discovered in the bottom of Burial Pit No. 1 at a depth of 1.9 feet below the surface in the form of six talons and a mandibular fragment of a Golden Eagle (*Aquila chrysaetos*).

In Burial Pit. No. 3 the left half of a dog (*Canis familiaris*) mandible was found associated with the human remains labelled Burial No. 96.

Pottery (Plates 59-60)

The limited number of sherds recovered from Burial Pits Nos. 1, 2 and 3 are of Late Woodland character and this fact, together with the implications derived from the absence of any earlier material, lead to the conclusion that these structures and their content may be attributed to that horizon.

Although all Late Woodland ceramics are described in detail in the sections on Late Woodland ware, the following is noted with regard to the examples from the Burial Pits. Burial Pit No. 1 produced one small exterior corded-interior smooth bodysherd and the rim illustrated as No. 2 in Plate 59. The latter is straight with a flat and slightly outsloping lip and bears exterior nodes raised by interior punctates 10 mm. below the lip. Opposed oblique incisions decorate the exterior surface from the nodes upward; one band of the same type decor is seen on the lip and immediately below on the interior. The sherd is typical of material from Glen Meyer components in southwestern Ontario.

Burial Pit No. 2 contained 23 exterior corded or smoothed cord-interior smooth bodysherds and the two rims shown in Plate 60. The large sherd, No. 3 in the plate, came from the sod just outside of the pit; it exhibits interior punctates-exterior nodes slightly below the lip with oblique dentate decor above the punctates, nodes and on the lip. Rim No. 4 in Plate 60 came from a depth of 9.5 inches at the north edge of the pit, was excurvate in form and virtually identical to sherds from the Miller site (Pickering, Ontario). It had a double row of interior punctates and corresponding exterior nodes over and above which, on the exterior, lip and interior, was dentate stamp decor.

VI *Ceramic Analysis*

Unquestionably, the ceramic remains were the most important and culturally revealing body of evidence encountered at Serpent Mounds site. Pottery was found in all features, in slight to relatively great amounts, and usually constituted, because of the lack or nature of other artifactual remains, the single most useful group of materials for assessing relationships. The great bulk of the pottery (96.2 per cent) falls into the Vinette 2 ware category, so-called because of the occurrence of the complex in the second or middle levels of the Vinette site in New York (Ritchie 1944; Ritchie and MacNeish 1949). In New York and Ontario the Vinette series and later Wickham, Kipp Island and Jack's Reef types are the characteristic Point Peninsula ceramics commonly found in association with other non-pottery materials regarded as culturally diagnostic. The sherds at Serpent Mounds site take on added importance when it is realized that only a small amount of nonceramic material was recovered, and that this, moreover, is of little comparative value owing to the nondescript, diverse or unique nature of many specimens. Similarly, the few Late Woodland sherds encountered lack comparative utility because they were not like described New York materials nor could they be subjected to specific comparisons in Ontario, where ceramics of that horizon are almost entirely undefined or not comprehended at present in any detailed historical scheme. Although the Late Woodland sherds (amounting to 3.5 per cent of the ceramic sample from the entire site) are shown in Table 10 as they occurred in the various features of the site, they have been omitted from other tabulations because of the typological and stratigraphical discontinuity and temporal hiatus evident with respect to the earlier Vinette 2 materials. Late Woodland and Iroquoian sherds were found superficially in the mounds and the shell midden in company with Vinette 2 ware which extended also to lower levels without any evidence of gradual typological transition. As well, most of the scanty Late Woodland sherds were the remains of only a few vessels which were confined, as in Mound G for example, to restricted areas of the surficial humus layer. These findings are interpreted to indicate that the Vinette 2 and later ceramics are to be regarded separately as the latter are apparently no more than fortuitous inclusions in the mounds or the midden. Note, however, that Burial Pits 1, 2 and 3 produced only Late Woodlands sherds.

The Vinette ware sample from the various features of the site totals 1904 sherds and ranges from 18 specimens in the fill of Mound I to 1440 from the shell midden. While the latter is quite adequate statistically, little reliance may be placed on the smaller samples, especially those derived from the auxiliary mounds.

A discussion follows of the Vinette 2, and later, ceramics encountered, including examples resembling the Ontario types appearing in the literature as Kant Rectangular Dentate (Emerson 1955), Malcolm Push-Pull (Dailey and Wright 1955) and Inverhuron Dentate (Kenyon 1959a). In addition, a group of 367 distinctive sherds are discussed in some detail and proposed

as a new Vinette 2 type. A total of 453 sherds are shown in the ceramic inventory (Table 10) as unidentifiable Vinette 2, as defined by exterior dentation and interior channelling or striation, which could not be recognized as falling clearly into any established type. Bearing exterior dentates, but no interior channelling, and untyped, was a single toy vessel from the midden (Plate 67).

In the ceramic analysis tabulations throughout the report, percentages are shown as whole numbers except for values of less than 1 per cent which have not been rounded.

1. VINETTE 2 WARE (Plates 29, 30, 39, 45 and 61-70)

Vinette Dentate (Plates 29 and 61)

Sherds of this type are decidedly in the minority at Serpent Mounds site and in the important pottery-producing shell midden. In addition to paucity of numbers, Vinette Dentate sherds were small and/or damaged and ordinarily smaller than the one sherd illustrated (No. 4 in Plate 61). The sherd illustrated, incidentally, had been coloured with red ochre, whether by design or accident, as was the case with about ten other sherds of all types from the shell midden. In Figure 7, Vinette Dentate appears as a minority element occurring in uniformly slight quantities in the upper levels of the midden and amounting, overall, to only 2 per cent ($n = 29$) of the total of identified sherds from that feature. It occurred in a relatively larger quantity in the ceramic sample (of border-line significance) from the Serpent Mound (Mound E) where the 18 sherds of this type constituted 21 per cent of the total.

What may be an early expression in southwest Ontario of the tradition which produced the Vinette Dentate type has been called Inverhuron Dentate (Kenyon 1959a: 17-18, Plate 7). Four similar sherds, including No. 3 in Plate 29, were taken from surficial or disturbed areas of the Serpent Mound. Kenyon's type series of 24 sherds is said to be virtually identical to a group of 37 sherds recovered by Jury from the lower level of the Burley site, and Wright (Wright and Anderson 1963: 44) has identified 62 rims at the Donaldson site which conform to Jury's characterization (1952: 67-70) of this buff-coloured, coarse-textured, thick material with large amounts of large-sized tempering, linear dentate decoration inside and out and interior channelling. Associated charcoal at the Burley site has been dated at 667 B.C. (C-608 in Jury and Jury 1952: 73) which Kenyon has accepted as applicable to his lowest pottery producing level at Inverhuron (= Lucas) and therefore regards as Early Woodland. In addition, from the same site, which he calls the Lucas site, Lee (1960) encountered what appears to be identical material, four sherds of which are illustrated in his Plate 3, Figures 13-16. Carbon sample S-119 from Donaldson produced a date of 519 B.C. (Wright and Anderson 1963: 50), in essential agreement with, but approximately 150 years more recent than the Burley determination.

On stylistic grounds it is difficult to regard the Inverhuron Dentate type sherds at Burley, Donaldson and Inverhuron-Lucas as separate from the

established Vinette Dentate type. It would seem reasonable to consider this material as a variant forerunner of the style as it exhibits linear dentate stamping and interior channelling, hallmarks of Point Peninsula 2 types generally and Vinette Dentate in particular. Structurally, the Burley, Donaldson and Inverhuron-Lucas materials are thick and coarse-textured and contain quantities of sizable grit temper, paste attributes which Wright (Wright and Anderson 1963: 46ff) emphasizes in distinguishing these sherds from Vinette ware although he sees a "basic genetic relationship." The Burley and Donaldson dates are corroborative, averaging about 600 B.C., further indication that Inverhuron Dentate may be regarded as a fairly early expression of a tradition that was subsequently exemplified by the linear dentate types in Ontario, particularly Vinette Dentate. The occurrence of four Inverhuron Dentate-like sherds in the Serpent Mound suggests a considerable longevity for the style which appears to have been a regional variant development (in the western part of southern Ontario) closely allied to New York type Vinette Dentate.

Vinette Complex Dentate (Plates 62-63)

Sherds of this type were relatively common over the site, occurring in notable quantities in the habitation area southwest of the mound group where they formed 14 per cent of the identifiable ceramics and in the shell midden where the average frequency throughout six excavation levels was nine per cent for the 123 sherds. Seriation analysis of the midden, Figure 7, shows that Vinette Complex Dentate steadily declines in frequency in each level to a modest four per cent in the top six inches. The same trend remains evident even if one does not consider the lower two midden levels (two to three feet) which may be regarded as less significant than the upper parts of the midden in terms of the size of the sample recovered.

In addition to the techniques reported by Ritchie and MacNeish (1949) for New York material of this type, one cannot escape the conclusion that some of the highly complex bands of dentation at Serpent Mounds were made with a roulette as suggested by the extraordinary uniformity of spacing of the decorative elements along the band and, in instances, the curvature of the bands (as on No. 2 in Plate 63) which seems only possible with a roulette. See also Plate 62.

Point Peninsula Corded (Plate 64)

The 91 Point Peninsula Corded sherds recovered from the midden (Plate 64) amounted on the average to six per cent of all sherds from the midden, achieving a maximum frequency (10 per cent) in the 1.0 to 1.5 foot level. Only one other Point Peninsula Corded sherd was identified from the entire site and that from the northernmost periphery of the Serpent Mound. Because of the presence of corded material in the shell deposit and its virtual absence from other sections of the site, the midden is thought to represent in part a later occupation than can be demonstrated ceramically for other features. The Serpent Mounds site examples do not differ from those described elsewhere in bearing vertical, horizontal and/or oblique

corded lines. Three sherds of the type from the midden bear interior rocker stamping.

Point Peninsula Rocker Stamped (Plates 30, 51 and 65-66)

Except in the habitation area southwest of the mound group, sherds of the Point Peninsula Rocker Stamped type are clearly the predominant ceramic remains. Altogether 789 examples of the type were recovered from the entire site of which 694 came from the midden where they constituted an average 48 per cent of the sherds. Seriation of the shell deposit material (Figure 7) revealed an increase in the popularity of rocker stamping throughout occupation of the midden to the uppermost level where a slight decrease was registered. The only area where rocker stamping was not the majority type (the habitation area southwest of the mound group) produced a high percentage of sherds assigned to the St. Lawrence Pseudo Scallop Shell type.

In a sample of this size (789) it is not surprising to find a rather considerable range of variation. On vessel exteriors the bands of rocker stamped decoration were found to run horizontally, obliquely or vertically, the last named the least common. Often, a combination of horizontal and oblique rocker stamped bands occurred as illustrated on sherd No. 1 in Plate 65 which also had three horizontal bands of boldly executed rocker stamping over channelling on the interior surface. Sherd No. 5 in Plate 66 illustrates oblique rocker stamped bands while No. 4 in Plate 65 had vertical rocker bands. Almost always the bands were separated by an area of vessel surface which was smooth while only a minority, unlike the described New York series, exhibited overlapping bands of rocker stamping (i.e., with no undecorated area of vessel surface intervening between the bands); see No. 3 in Plate 65. Commonly some rocker impressions were executed on the interior surface of sherds of this type as was the case, to a lesser extent, with other types of Vinette 2 ware. Nor was it unusual at Serpent Mounds site to find sherds of the Point Peninsula Rocker Stamped type which had been decorated with several different rocker dentates (sherd No. 1 in Plate 65 and No. 6 in Plate 66 are examples). The latter also bore some interrupted linear dentation which would seem to link it with a proposed new type, discussed below, which formed a major portion of the shell midden ceramics. Other aspects of established Vinette 2 types in the midden, as rim form and especially lip treatment, suggest relatedness to the interrupted linear decorated group (Rice Lake Banded) and lend a unifying element to the entire shell midden collection.

Manipulation of the rocker stamp itself ranged from the "open" technique, which produced a band that was clearly a sequence of crescents joined at alternate sides, to very closely executed impressions that were difficult to recognize as having been made with a rocker and showed resemblances to bands of decoration seen on Vinette Complex Dentate. The open variety may be seen on sherds Nos. 1 and 3 in Plate 66 and the more complex variety on a number of the other sherds illustrated. Rarely, as in the New York series, were corded rockers observed and the smooth rocker stamp, while more frequent, was not common. Usually the stamp

was notched or dentated as may be seen from the plates. Sherd No. 1 in Plate 30 from the Serpent Mound is an example of a complexly dentated rocker stamp executed in overlapping bands; the rocker stamp in this instance was 38 mm. wide and manipulated so as to leave a 3 mm. interval on alternate sides between impressions. An 8 mm. wide area in the middle of the stamp had been cut into rectilinear dentates, while on each side (laterally) of the implement were sections, 15 mm. in length, cut to leave a St. Lawrence Pseudo Scallop Shell-like impression. Some rocker stamping was done with a tool from which the mid-portion had been removed so as to leave a smooth undecorated strip down the middle of the band of rocker dentate; on some of these "centre removed" rockers the number and size of the dentates on either side were unequal, e.g., two large teeth on one side and seven finer teeth on the other. When this sort of dentate was employed in a closely spaced fashion it was not easy to recognize it as rocker stamping. Beaubien (1953: 59 and Figure 22) has noted a similar feature on rocker stamped sherds from the Sny-Magill group of Effigy Mounds in northeastern Iowa. Sometimes the bands of decoration were applied with a dentate that was more "walked" than rocked, which technique obscures recognition of the rocker motion as it de-emphasizes the medial portion of the stamp and does not produce in the more lateral dentates the clear evidence of rotation necessary in simple rocker stamping. Another variant of the technique, seen on a minority of sherds, was what may be called bands of "V-shaped" rocker stamping, the result of sequential rocker impressions connected laterally on only one side.

Point Peninsula Plain (Plate 67)

Sherds of this type were derived principally from the shell midden as a minority element (average of 2 per cent of midden sample). From the quantitative standpoint, the type no doubt suffers somewhat in comparison to other recognized Vinette 2 ware, as it is necessary to rely solely upon rim fragments in order to avoid inclusion of plain bodysherds of undeterminable type. Judging from the general ratio of identifiable and bodysherds in the midden, it would be safe to estimate that the Point Peninsula Plain type actually occurred therein in about double the amount recognized and counted for seriational purposes. The sherds in Plate 67 illustrate the type.

St. Lawrence Pseudo Scallop Shell (Plates 45 and 63)

This type is relatively less common in the midden (Plate 63), where 105 sherds constituted an average of seven per cent of the collection. In other areas of the site, up to an absolute and percentile maximum in the habitation area southwest of the mound group (Plate 45), 196 sherds accounted for 64 per cent of the ceramics (a discussion of the significance of these findings may be found in chapter IV). As a whole, the St. Lawrence Pseudo Scallop Shell type at Serpent Mounds site conforms quite closely to the specifications outlined by Ritchie and MacNeish (1949). It may be noted in particular that the thin, everted, rounded or pointed lip and rim form characteristic of the New York material is seen also on Serpent

Mounds site sherds of the type. Other Vinette 2 forms at Serpent Mounds site, and perhaps generally over Ontario, appear to lack the same degree of lip area eversion and form defined for New York while tending toward straighter rims and flatter lips.

Emerson (1955: 37ff, 58-59 and Plate 9) has defined the type Kant Rectangular Dentate from the Kant site in the middle Ottawa Valley. In all characteristics (paste, surface finish, decoration and form) the type is very like St. Lawrence Pseudo Scallop Shell (Ritchie and MacNeish 1949: 103 and Figure 37), differing only in some detailed aspects of the dentate decoration and is clearly based upon the same stylistic concepts evident in St. Lawrence Pseudo Scallop Shell. There seems reason, therefore, to regard the Kant site group as a variant form of, rather than distinct from, St. Lawrence Pseudo Scallop Shell. The possibility that a degree of regional specialization is reflected in the Kant ceramics, as compared with the Point Peninsula series in New York, is considered likely by Emerson (1955: 38).

A total of 10 sherds (five from the habitation area southwest of the mound group, one from the Serpent Mound and four from the shell deposit) of the Kant Rectangular Dentate variety have been tallied under the St. Lawrence Pseudo Scallop Shell type.

Incised (Plate 61)

A very few sherds exhibited incising; because of the lack of numbers and the small size of the sherds, the sample has been considered inadequate for typological evaluation (i.e., comparison with the Wickham Incised type). Incised specimens were very slightly represented in the shell midden (six sherds) and present only as a trace element elsewhere on the site (No. 3 in Plate 61).

Rice Lake Banded (Plates 39 and 68-70)

In addition to the six established Vinette 2 types identified in the midden, there remained a group of 367 rim and decorated sherds exhibiting the general characteristics of the ware but which were not capable of being fitted into existing type categories as established by Ritchie and MacNeish (1949). Analysis of this variant Vinette 2 material, in spite of restriction geographically and chronologically as it is presently known, suggested the applicability of type status on the basis of the size of the sample, attributes of Vinette 2 ware and a standardized decorative motif related to but distinct from established types. Since sherds of this character have been found by excavation on at least four sites on Rice Lake and since banding of decor is the unifying and distinguishing feature, the name *Rice Lake Banded* is suggested.

At Serpent Mounds site, except for two sherds from Mound I, this type was found only in the shell midden and accounts for 25 per cent of the total number of rim and decorated sherds (1440) taken from that feature. The vertical distribution of the type in six-inch levels from the surface to two and a half feet in the midden is quite uniform, varying only between 23 per cent and 29 per cent of the sherds in any one level. Similarly, the occurrence of this group in absolute and relative frequency

in horizontal distribution throughout the midden was not unlike that of the other Vinette 2 types.

Decorative bands on these specimens were applied for the most part (83 per cent) by an interrupted linear technique. Rouletted bands were seen on 13 per cent of the sample, three per cent showed a trailed or impressed decorative element while only one per cent of the decor was done with a corded implement. Some sherds exhibited simple (probably stick-end) push-pull technique while others bore decoration that might more accurately be called stab and drag. In other instances, the tool (dentate or punctate) appears not to have been held on the surface of the vessel between impressions, producing a band of closely spaced elements. The sundry nuances of technique, from push-pull to individual elements in series, have all been regarded as a form of interrupted linear decoration and include the many intermediate variations arising from differences in the angle at which the tool was held in relation to the vessel surface, whether the implement was or was not dragged between punctations, extent of interval between impressions, force with which the tool was pressed into the paste, etc. As well, in a few instances, the distinction between some interrupted linear technique and trailing is based on very subtle and slight tool manipulations. Some bands resemble trailed grooves, with longitudinal striations, etc., but were actually produced by an interrupted linear technique as indicated by inconspicuous ridges traversing the bottom of the grooves at more or less regular intervals. Other banding was done with a tool held at a low angle to the vessel surface to create a series of oblique impressions which resemble cording. A dentated tool when applied in a strip at closely spaced intervals of 1 mm. or so appears as complex dentate. Much of the interrupted linear decoration, especially of the push-pull variety, was done with a notched-end tool, to leave a ridge down the centre of the decorated band, or a series of sequential and parallel dentates into which a gap had been cut to produce a smooth and undentated medial strip.

It may be noted that what has been called the Malcolm Push-Pull type from the Malcolm site, on the St. Lawrence River near Cornwall, was decorated " . . . by means of a push-pull technique and consists of an encircling series of horizontal impressions, equally-spaced, beginning just below the lip and extending down on the neck" (Dailey and Wright 1955: 13). For comparative purposes, it is regrettable that only eleven sherds (10 per cent of total sherds) of this type were encountered, as a specific identity to Rice Lake Banded decorative technique is apparent and other more general resemblances are suggested. The remaining Vinette 2 ware recovered indicates a placement for the Malcolm site in the latter portion of the New York Point Peninsula series (Dailey and Wright 1955: Figure 8).

Forty-seven sherds bore rouletted bands produced by either a fine- or coarse-toothed implement or what appeared to be the end of a stick used as a roulette. Decoration of the latter kind seemed the result of rolling the notched edge of a stick-end held perpendicular to the grooves produced and at about a 45° angle with the vessel surface, not unlike the technique illustrated by Shepard (1961: Figure 15b). The distinction between some

interrupted linear technique and rouletting has not always been easy to discern but the latter seemed indicated when no longitudinal striation or evidence of interruption could be observed and the design elements forming the bands were so closely and/or uniformly spaced as to practically preclude the possibility of their having been executed by a single repeated punctate. Either interrupted linear or a roulette technique could have produced the curvilinearity of some bands but decoration of the latter sort lacked, again, longitudinal striations. Finally, lines of decoration of variable length (especially very short lines as in triangular areas) of exactly the same pattern are, perhaps, most easily explained as rouletting.

Eleven sherds were banded by trailing or impression. Impression, as used in this context, is essentially a process of stamping with a smooth implement to form grooves. Again, the distinction between interrupted linear incision and trailing or impression can be very subtle.

Five sherds, including four rims characteristically flat, outslowing and dentated, exhibited bands of corded stick impression.

Examples of the Rice Lake Banded type are illustrated in Plates 39 and 68-70. The following detailed examination of a number of these specimens is intended to contribute to a better conception of the group as a type; a summary description in the standard form appears at the conclusion of this section.

Sherd No. 4, Plate 68, was a typical Rice Lake Banded rim with interior striation and one vertical interrupted linear band extending down the interior wall from a flat, outflaring and dentated lip. Two horizontal bands of interrupted linear punctates encircled the rim beneath the lip. Below, oblique bands, separated by 4 mm. wide smooth strips, made by the same technique but a different tool, extended down the neck area. Note that a medial ridge was formed down the centre of the oblique bands as a result of use of a notched punctate.

Rim No. 1, Plate 68, slightly everted near the lip, was crossed over the entire interior surface by horizontal bands of interrupted linear dentates. The lip was flat, outslowing and dentated obliquely. Shortly below the lip on the exterior a horizontal series of oblique dentates occurred from which vertical bands of interrupted linear dentation extended downward. Between the bands vertical strips of smooth surface averaged 5 mm. wide.

Rim No. 6 in Plate 69 bore heavy interior channelling and a flat outslowing and dentated lip. Vertical dentates 10 mm. in length decorated the rim immediately below the lip. Vertical bands of oblique interrupted linear punctates extended down the neck toward the shoulder separated by smooth surfaced strips about 3 mm. wide.

A large everted rim (No. 3 in Plate 68) had a flat, outslowing lip obliquely decorated with dentates. Bands, formed by close-spaced individual dentates 7 mm. in length, extended horizontally around the rim on the interior and exterior immediately beneath the lip. Below, on the exterior, a single band of interrupted linear punctation separated the area of upper rim decoration from similar oblique parallel lines extending down over the smooth-surfaced body of the vessel. The oblique elements, spaced at an average of 5 mm., superficially resembled cording but were evi-

dently made with a tool (about 4 mm. in width) held at approximately a 45° angle to the long axis of the lines so as to leave a series of oblique impressions when employed in an interrupted linear fashion. The technique was the same as utilized on sherd No. 6 in Plate 69, described in the foregoing paragraph, but differences of execution effected distinct decorative results. The vessel interior was channelled.

Sherd No. 6 in Plate 68 was a large rim from the shell layer. The lip was flat, outsloping and crossed with dentates of the same sort as appeared vertically on the interior immediately below the lip for a distance of 8 mm. and obliquely below the lip on the exterior for the same distance. Below on the exterior, to about the point of maximum constriction of the neck, were triangular areas filled with oblique bands of a complex interrupted linear dentate spaced to leave smooth-surfaced strips averaging 4 mm. in width between the bands. The oblique bands contained in successive triangular areas were perpendicular to one another, i.e., opposed, except in a triangular area where a ridge extended downward on the rim for a distance of about 35 mm. below the lip and was surrounded by bands of V-shaped pattern. The lip was raised slightly (3 mm.) above the ridge to form a gentle castellation. Encircling the vessel below the triangular areas were four horizontal bands of the same decorative element beneath which lightly executed lines of oblique interrupted linear punctates were indicated. The interior was channelled.

Both interrupted linear and roulette dentation were noted on sherd No. 2 in Plate 68 from the shell layer. Three bands of the former technique crossed the top of the sherd below which (on the neck?) two horizontal bands of rouletting were preserved. The interior was channelled and carried two horizontal bands of rocker stamping.

Rim No. 4 in Plate 69 showed a variety of rather complex exterior decoration which demonstrated the relatedness of sherds banded by different techniques. The interior was channelled and the rim straight with an everted lip bearing pie crust treatment. A 15 mm. wide area on the exterior rim below the lip was filled with two horizontal bands of rouletted dentate. Below, on one side, were almost vertical parallel corded lines; in the centre of the sherd oblique parallel push-pull lines were noted while the remaining portion was covered with interrupted linear punctate bands. Another sherd, not illustrated, of identical form with a typical flat, outsloping and dentated lip had been banded only by interrupted linear dentates.

Everted rim No. 5 in Plate 69 had a typically flat, outsloping and dentated lip. Immediately below the lip on the exterior three horizontal bands of short (6 mm.) vertical dentates had been arranged in close sequence. The bands were done in part by an interrupted linear technique and elsewhere formed by the same dentate applied in a close sequence of individual impressions. Below, extending vertically on the neck for a distance of some 35 mm., were bands of rocker stamped impressions made with the same dentate utilized on the rim. A small area preserved on the lower part of the sherd indicated that a horizontal dentate band, as on the rim, occurred below the vertical rocker stamping.

Rim No. 3 in Plate 69 exemplified banding by the stick-end roulette

method. The lip was flat, outslipping and dentated. Oblique 7 mm. long stick-end roulette impressions carried down from the lip on the exterior above horizontal grooves spaced three mm. apart executed by the same rouletting technique. The interior surface was channelled and embellished, beneath the lip, by a horizontal rocker stamped band from which another rocker stamped band extended obliquely down the interior wall.

Large rim No. 7 in Plate 69, from the shell layer, carried rouletted, interrupted linear and corded elements. The rim was slightly everted near the lip with an incipient (low rounded) castellation. Below the lip on the interior were short (*ca.* 9 mm.) oblique impressions which appeared also on the flat, outslipping lip. Short oblique dentates 5 mm. in length occurred immediately below the lip on the exterior. Spaced (from 3 to 8 mm.) bands of fine rouletted and interrupted complex dentate extended downward vertically from the lip. Between the bands, the vessel surface was smooth. The bands filled an area between 30 and 60 mm. below the lip (*i.e.*, height of the rouletted-complex dentated bearing rim above horizontal corded lines varied between 30 and 60 mm.; "castellation" on lip at highest point) beneath which two horizontal lines of interrupted linear technique separated the rim area from, on the one side, horizontal corded lines and, on the other, oblique parallel spaced bands of what appeared to be oblique interrupted linear dentate. The rim interior was smooth.

Amongst sherds banded by trailing or impressing was rim No. 2 in Plate 70, one of several sherds from the same vessel. The interior was channelled and from about the shoulder to the flattened lip on the same surface were vertical rocker stamped bands. The lip was slightly outflaring and dentated. On the exterior rim in an area extending 30 mm. below the lip were six horizontal parallel trailed or impressed grooves; below on the neck, were vertical grooves extending, evidently, to the shoulder region. A sherd from the shoulder of this vessel had vertical interior rocker stamp bands and exterior parallel oblique trailed or impressed grooves above a band of horizontal rocker stamping at the shoulder.

Rimsherd No. 1 in Plate 70 appeared to be primarily trailed but in places the grooves showed evidence of execution by an interrupted linear technique. In form, thickness and paste this rim, and 17 other rim and decorated sherds from the same vessel, were very like sherd No. 2 in the same plate but lacked rocker stamping on the interior. All were channelled; the flattened lip was dentated and below, on the exterior, were two horizontal grooves above areas, done in the same technique, of right and left angling grooves. Small (triangular?) areas between the oblique plats were filled with horizontal grooves.

On rim No. 3 in Plate 70 smooth dentates crossed the flat outslipping lip on a rim of marked eversion. Short smooth oblique dentates or impressions occurred immediately below the lip on both surfaces below which, on the exterior, were four very carefully trailed or, more likely, paddle-edge impressed grooves extending horizontally around the rim. Below the horizontal grooves, to at least the shoulder of the vessel, were areas of oblique parallel grooves done in the same technique. A vertical row of short (*ca.* 8 mm.) horizontal impressions extended on the neck between the areas of opposed oblique grooves. The interior was channelled.

Number 5 in Plate 68 exhibited a typical flat, outsloping and dentated lip on a slightly everted rim. Two horizontal rows of interrupted linear decor encircled the upper rim beneath the lip on the exterior above oblique, probably impressed, grooves. The interior was smooth.

Large rim No. 1 in Plate 69 from the shell layer had both corded and stick-end rouletted design elements. The rim was everted with a flat outsloping and dentated lip. The upper portion of the exterior showed a comb or brush marked surface finish over which, just below the lip, oblique dentates occurred. Below were five horizontal parallel lines of stick-end rouletting which encircled the rim. On an identical sherd not illustrated two plats of opposed short (8 mm.) oblique corded impressions extended from the lip downward interrupting the horizontal pattern. From approximately the point of greatest constriction of the neck downward, parallel oblique corded lines decorated a smooth surface. The interior was channelled with two horizontal bands of bold rocker stamping around the upper rim and oblique rocker stamped bands carrying down the interior wall.

Small corded rim fragment No. 2 in Plate 69 had a flat outsloping dentated lip and channelled interior. The exterior surface had been brushed obliquely over which, at right angles, oblique corded elements extended from a single horizontal corded line beneath the lip.

The general characteristics of the group may be outlined as follows:

RICE LAKE BANDED (Plates 39 and 68-70)

Size of Sample: 367 rim and decorated sherds of which 96 (26 per cent) are rims.

Paste:

Method of manufacture: Coiling.

Temper: Grit of small to medium size in moderate amounts.

Texture: Laminar interior structure often evident but paste and coils generally well consolidated. Tendency to crumble at breaks.

Hardness: ca. 2.5.

Colour: Vessel surfaces show considerable variation in colour from charcoal grey to buff with a tendency to the lighter colours. Paste interior colour usually not markedly different from the surface but tends to be darker.

Surface finish: Exterior surface bearing decoration is smooth; exterior body is smooth or brushed. Interior is channelled or striated (78 per cent of sample) or smooth. Smoothing of the interior surface chiefly confined to rim area which may also, in a minority of cases, show bands of rocker stamp or interrupted linear decoration.

Decoration:

Design: The motif centres upon the arrangement of decorative bands, executed by various techniques, on the upper portion of the vessel. These parallel bands, in decreasing order of frequency, extend horizontally (31 per cent), obliquely (20 per cent) or vertically (10 per cent) while 29

per cent of the sherds exhibit bands arranged in some combination of the above (remaining 10 per cent indeterminable). Most often the bands appear to extend in an open pattern to the shoulder region but occur also in triangular (isosceles) areas or plats on the rim. The bands range between 2 and 6 mm. in width, commonly centring around 4 mm. The vessel surface between bands, of similar dimension, is smooth.

Technique: The most frequent technique (83 per cent) is a carefully and sometimes complexly executed interrupted linear dentate or punctate. A wide variance in technique, ranging continuously from individual punctates or dentates in sequence (i.e., bands) to interrupted linear incision (push-pull), makes generalization difficult. The individual design elements forming some bands are placed obliquely to the long axis of the band. Bands executed evidently by a rouletting technique comprise 13 per cent of the sample while the remainder (4 per cent) show corded, trailed or impressed design elements.

Distribution: Exterior decoration extends from the lip downward to, evidently, the shoulder region, covering an estimated 35 to 45 per cent of the vessel surface. The flattened lip is always decorated.

Form:

Rim: Slight to moderate eversion, especially near lip.

Lip: Consistently flat and outslipping.

Neck: Slight or gentle constriction.

Body and base: Unknown.

Thickness: 5-6 mm. at lip increasing to ca. 10 mm. on body.

Diagnostic features of the type: Parallel decorative bands usually executed in an interrupted linear technique in horizontal, oblique, vertical or combined patterns separated by strips of smooth vessel surface. Rims are everted near the lip which is always flat, outslipping and dentated. High incidence of interior channelling.

Geographical range: Occurs on at least four of several Vinette 2 producing components on Rice Lake, notably Serpent Mounds, Cameron's Point and Jubilee Point. Present as a minor element in the midden on East Sugar Island, Rice Lake, but untyped by Ritchie (1949; 12-18, 21). Specific resemblances of decorative technique to a small group of sherds from the Malcolm site (Malcolm Push-Pull). Also reported by Ritchie (personal communication) to occur in the St. Lawrence Valley. A possibly related but untyped group of Vinette 2 sherds has been reported from the Red Lake site (Ritchie 1955: 52).

Temporal range: Vinette 2 characteristics and association with other types of that ware category at Serpent Mounds and elsewhere on Rice Lake indicate a Middle Woodland (Point Peninsula 2) chronological position.

Probable relationships of the type: Clearly related stylistically to other Vinette 2 types (e.g., general rim form, banding of decor, high percentage

of interior striation) and may probably be regarded as a regional development based on concepts common to the entire Vinette 2 series. The present limitations of occurrence in both time and space do not allow for speculation as to explicit generic relations.

Interiors (Plate 61)

A high percentage of the interiors of identifiable sherds from the entire site were channelled or striated as Table 11 indicates.

Considered separately, the statistics for the shell midden alone (Figure 7) show virtually identical percentages for interior surface treatment of the 1440 identifiable sherds.

Unidentifiable Vinette 2 sherds (Plate 29)

Among the ceramics from the Serpent Mounds site, as from any site, there was a group of sherds that could not be fitted into type categories, in most instances for reasons of small size, eroded and/or otherwise damaged condition. Of this material, a count was made of those sherds that exhibited exterior dentation and interior striation or channelling on which basis they have been regarded as Vinette 2 ware, although unassigned to specific type status. The results of the tally for the shell midden included a group of 258 unidentifiable Vinette 2 sherds, almost one-fifth as many as were typed. For the entire site a total of 1904 sherds were recognized as to type, a figure that could have been expanded by 24 per cent had all Vinette material lent itself to identification (i.e., 453 unidentified Vinette 2 sherds from the entire site). In addition, there remained a number of unidentified sherds which were not of Vinette character but of Late Woodland origin; see the following section.

Of special note are a group of sherds, probably from one vessel, which were found scattered in the fill of the Serpent Mound through three five-foot squares at the extreme northernmost point of the mound near the east end. In this group there were 11 rims, 54 decorated neck and shoulder area sherds and 67 bodysherds, the latter exhibiting smooth or brushed-marked exterior surfaces and interiors sometimes channelled but most commonly smooth. The rim and decorated sherds revealed a moderately everted rim with a flat lip bearing a single longitudinal dentate identical with that used extensively to decorate the upper portion of the exterior of the vessel (see sherds numbered 1 and 2 in Plate 29). The exterior rim was smooth for a distance of 5 mm. below the lip where a horizontal ridge (most likely modelled rather than applique) occurred and was crossed with vertical dentates at 2 or 3 mm. intervals. Twenty millimeters below, a second beaded ridge ran horizontally around the vessel at about the point of maximum constriction of the neck. The lower strip of beading was punctated at about 12 mm. intervals as were similar ridges seen on decorated sherds from lower on the exterior where they extended, evidently, obliquely. Fine parallel oblique dentates filled the area between the upper horizontal beads and extended, below, in contrasting oblique and horizontal plats usually, but not always, separated by the raised punctated beads. The dentate tool was carved to leave very fine teeth projecting alternately from either side

of the impression. These specimens show a resemblance to one untyped sherd illustrated by Ritchie (1949: Figure 4s) from the lower level of the nearby East Sugar Island midden.

2. LATE WOODLAND WARE (Plates 30, 34, 39, 59, 60 and 71)

Seventy sherds (3.5 per cent of the total ceramic collection) of certain or evident Late Woodland origin were found in the various features of the Serpent Mounds site, principally in the shell midden which produced half of the total. As is indicated in the ceramic inventory (Table 10), all Late Woodland sherds from mounds (Mounds E, G and I) were encountered in the surficial or humus zone and never buried deeply in mound fill or associated with burials. Likewise, the 38 Late Woodland sherds from the shell midden were restricted to the upper levels, usually in the sod, and were never found in lower portions of the deposit. This evidence and the small number of sherds recovered is interpreted as indicating a discontinuity and temporal hiatus between the Vinette 2 and later ceramics. Except as already noted in connection with Burial Pits Nos. 1, 2 and 3, the site appears to have been devoid of any large scale occupation after the principal Point Peninsula component and, accordingly, the Late Woodland and Iroquoian examples have not been included in seriation analysis of the various features where they were encountered with the earlier and distinct Point Peninsula materials. It is suggested that what few Late Woodland sherds were recovered from the mounds and midden indicate no more than sporadic small group visits. In this connection, it is interesting to note a cluster of 17 exterior corded and interior smooth sherds (just half of the Late Woodland total from the entire midden) from the sod level of the northernmost square in Row 62 (62-N-1), including an exterior corded and interior smooth pot bottom and rim fragment No. 1 in Plate 70. Presumably a later fortuitous inclusion in the same layer was part of the rim of an Iroquoian seed pot shown as No. 3 in the same plate.

None of the Late Woodland sherds have been identified as to type but they appeared to fall into two general categories; one consisted of Glen Meyer-like material (Lee 1958; Ridley 1958; Wright 1961), while the second group of unidentified sherds of Late Woodland character was always smooth on the interior surface and usually exhibited exterior cording. Below, for each feature, some of the Late Woodland examples are described.

Serpent Mound (Mound E) (Plate 30)

All eight sherds were rims with interior punctates and exterior nodes which fell into the Glen Meyer classification. Sherd No. 4 in Plate 30 came from the surficial sod near the northern periphery of the mound at the west end of the eastern excavation. The vessel interior was smooth and the rim channelled (that is, not striated as the interior of Vinette 2 ware but with an excurvate rim showing concavity on the interior surface). Evenly spaced interior punctates about 15 mm. below the flat and dentated lip had raised corresponding nodes on the exterior. Above the nodes the upper rim carried

four horizontal lines of push-pull incision. The exterior nodes were separated by short dentates and below the nodes two horizontal rows of vertical dentates were preserved. The sherd evidently may be regarded as on the Barrie site level, showing resemblances to what Ridley (1958) has called Scugog Classic Bossed, Bossed Scugog Punctate Collar and Iroquoian Linear from that site; at least two other sherds in the collection were comparably decorated, one with a double row of interior punctates-exterior nodes, but both had only incipient rim channelling. Another small rim could be duplicated at the Miller site (Kenyon 1959b; 1960) in being channelled with interior punctates-exterior nodes and decorated on the exterior, flat lip surface and above the punctates on the interior rim with a dentate stamp. Another small sherd had a flat lip crossed with incision or impression that was seen also on the interior above the punctates and on the exterior rim in a chevron design (the same type as one sherd from Burial Pit. No. 1).

Mound G (Plate 34)

The Late Woodland ceramic element from Mound G occurred entirely in the west half of square No. 2 at the northwest edge of the mound in the sod layer between two and six inches beneath the surface. Here a total of 313 sherds, including 15 rims (plus 11 neck area and 287 bodysherds in addition to the bodysherds shown in the Mound G ceramic analysis in Table 5), were found in a cluster, the remains of four vessels.

Two vessels are represented by one rimsherd each which had interior punctates-exterior nodes on a channelled (excurvate) rim bearing vertical and oblique dentation like that seen on Miller site material. Ten rims, from a third vessel, carried Glen Meyer decoration on straight rims. Oblique stamping covered the exterior, lip and interior above the punctates and nodes 17 mm. below the flat lip. The surface was smooth inside and out below the interior punctates-exterior nodes. These sherds compare best with what Ridley (1958) has called Scugog Classic Bossed and are also like some Miller site rims except for the lack of excurvate form.

A fourth vessel was represented by three rim fragments (No. 1 in Plate 34), 11 neck area sherds and almost all, presumably, of the 287 body sherds recovered from the cluster (108 exterior corded-interior smooth; 73 exterior-interior smooth; and 106 small sherds smooth on the one surface preserved). The rim was sharply everted and bore rectilinear exterior punctates and interior nodes. Above the nodes on the interior were three horizontal rows of interrupted linear (push-pull) punctation which also appeared on the 8 mm. wide lip. The exterior was covered from the lip to approximately the shoulder with horizontal rows of interrupted linear punctation below which the upper portion of the exterior body was corded. The vessel interior and apparently the bottom one-third to one-half of the exterior surface was smooth.

Mound I (Plate 39)

The reconstructed rim (No. 2) shown in Plate 39 came from two inches beneath the surface in the sod layer on the northwest side of the mound.

The rim, measuring 110 mm. in diameter, was everted and carried four small but distinct castellations. The smooth exterior surface preserved exhibited two plats of horizontal corded stick decoration and there were probably five such zones around the entire vessel, separated by undecorated areas. The lip was corded and the interior of the rim and castellations had been decorated with opposed oblique corded stick lines. The vessel interior was smooth.

Burial Pits Nos. 1, 2 and 3 (Plates 59 and 60)

Burial Pit No. 1 produced a projectile point, one small exterior corded-interior smooth bodysherd and one rim (see Plate 59). The latter was smooth-surfaced inside and out, had a flat lip and a straight profile. A single horizontal row of punctates 10 mm. below the lip on the interior had raised exterior nodes. A single row of oblique incision or impression encircled the rim interior immediately below the lip which was similarly decorated. On the exterior, to a point just below the nodes, two horizontal rows of opposed oblique incised lines formed a continuous chevron pattern. This sherd is identical with some at the Goessens site, a Glen Meyer component in southwest Ontario.

Burial Pit No. 2 yielded 23 exterior corded or smoothed cord-interior smooth bodysherds and the two rims (Nos. 3 and 4) shown in Plate 60. The larger rim, from the sod just outside of the pit, had a slightly everted form and a flat 8 mm. wide lip. Oblique dentates covered the lip, interior and exterior surface above interior punctates and exterior nodes 10 mm. below the lip. The neck was smooth but the lower body corded on the exterior. Sherd No. 4 in Plate 60, from the pit fill, was an excurvate rim and carried a double row of interior punctates-exterior nodes. Above the punctates on the interior, and carrying over the lip and down the exterior over the nodes, was dentate stamping, very much like sherds from the Miller site.

One exterior corded and interior smooth bodysherd constituted the entire artifactual content of Burial Pit No. 3.

Shell Midden (Plate 78)

As noted earlier in this section, about half of the 38 Late Woodland sherds recovered from the midden were taken from the uppermost level of a single square (62-N-1) and represented the discarded remains of two vessels. Among those sherds was the rim No. 1 in Plate 71 and a body fragment from the same vessel. The interior of the vessel was smooth and noded on the rim as a result of exterior punctates about 20 mm. below the lip. The rim was sharply everted at the lip, which was flat and decorated with corded stick impressions that extended 10 mm. down the sloping interior rim. The top 8 mm. of the outsloping rim was smooth, below which the exterior showed cord-wrapped stick impressions in horizontal parallel rows extending over the entire neck area to the top of the shoulder, a distance on the surface of the neck of about 70 mm. A single row of corded-stick punctates separated the decorated area from the vertically corded body below.

A second vessel was represented by three rims and nine decorated sherds with smooth interiors and corded exteriors. The rims were markedly out-sloping above interior punctates and resultant exterior nodes about 20 mm. below the lip. The interior rim carried oblique corded lines between the corded lip and punctates. On the exterior heavy horizontal parallel corded-stick impressions covered the rim and neck.

Sherd No. 2 in Plate 71, with interior punctates and exterior nodes, could be duplicated at the Miller site except that the rim shape in this case was out-sloping rather than excurvate or channelled as is typical at Miller. The exterior had vertical cording below the nodes and oblique corded-stick impression between the nodes and the lip. The lip was flat with corded stick impression seen also on the interior in oblique lines down to the punctates.

The remaining sherds ($n = 20$) were Glen Meyer in character in having channelled (excurvate) rims, interior punctates-exterior nodes, flat lips and other attributes seen, particularly, at the Miller site.

3. LATE PREHISTORIC; IROQUOIAN (Plate 71)

As Table 10 shows, only six sherds (or less than one-third of one per cent of the ceramic sample) pertaining to the Late Prehistoric or Iroquois were recovered and these came entirely from the sod layer over the shell midden (half or three from square C10c 4-2). Little can or need be said of these examples except that they, like the Late Woodland sherds discussed in the preceding section, may be taken to indicate minimal use of the immediate area in late prehistory; perhaps infrequent overnight camping by small groups. The writer is indebted to J. Norman Emerson for recognition of the Roebuck characteristics of three sherds and the Huron nature of a fourth. Part of the rim of a seed pot is illustrated as No. 3 in Plate 71.

4. BODYSHERDS (Plates 61 and 72)

Surface Finish (Plate 61)

The surface treatment of the bodysherds recovered from various areas of the site may be found detailed in the ceramic analysis tables for individual features and is summarized in Table 12 showing average (combined) occurrences and percentages for the site as a whole.

While bodysherds are not identifiable as to type or ware at this site, it may be surmised that these statistics pertain almost entirely to Vinette 2 ware if we may extrapolate from the inventory shown in Table 10. Therein Vinette 2 types total more than 96 per cent of all ceramics, Late Woodland material 3.5 per cent with the six Iroquoian sherds, entirely from the midden, accounting for a fraction of one per cent. In a few instances, as in Row 62 of the shell midden or as noted for some bodysherds in the Mound G ceramic analysis (Table 5), exterior-corded and interior-smooth bodysherds could be associated with the scanty identifiable Late Woodland sample. No doubt the most direct evidence came from Burial Pits Nos.

1, 2 and 3 which produced three decorated Late Woodland sherds and a total of 25 exterior-corded and interior-smooth body fragments in the complete absence of Vinette 2 or Iroquoian material.

As may be seen in the above table, the bulk of body exterior surfaces (89 per cent) are about evenly divided between smooth and comb- or brush-marked while only 11 per cent had been corded. In light of the remarks in the foregoing paragraph, it is not unreasonable to suppose that only a part, and probably a minor part, of the corded sample derived from Vinette 2 ware. The preserved interior surfaces of body sherds are either smooth or channelled in about equal proportion. In comparison to the Vinette site, as reported in Ritchie and MacNeish 1949: Figure 43, Serpent Mounds ceramics most markedly differ in showing a greater incidence of exterior comb- or brush-marking (and lesser percentages necessarily of exterior cording or smooth treatment) and about double the percentage of channelling or striation at the expense of smooth interior surfaces.

Table 13 summarizes the surface finish of bodysherds from the shell midden, which are included also, combined with all other features in Table 12. The above tabulation together with the typological analysis in Figure 7 provides complete midden statistics. The most salient differences noted in the comparison of New York and Serpent Mounds bodysherds surface treatment are even more pronounced when only the above shell midden data are considered; i.e., the high incidence of exterior comb- or brush-marking and interior channelling with a commensurate diminution of the remaining attributes of surface treatment.

Vessel Bases (Plate 72)

A number of basal fragments were recovered from the shell midden and the configuration of many indicated a semi-globular body form while others suggested a more elongate body with conical or pointed bases. Sherd No. 1 in Plate 72 exemplifies the latter form with exterior comb- or brush-marking and interior channelling. Sherd No. 2 in the same plate, with a smooth interior and smoothed-over brush- and cord-marked exterior, might be called subconoidal in form (cf. Ritchie and MacNeish 1949: Figure 41b).

5. SUMMARY AND COMPARISON

Ceramic relationships have already been remarked upon in previous sections dealing with individual features of the site. Comparisons have been made on the established assumption that components share trait complexes, ceramic typologies in this case, in more or less degree according to relatedness in time and/or space. The premise holds that sites exhibiting similarity have cultural and probably chronological unity in proportion to the degree of resemblance. Components that are thus related culturally but are known to be separated in time are regarded as diachronic participants in a common tradition.

Proceeding on this basis, the Serpent Mounds ceramic complex is clearly related to that defined by Ritchie in New York and to a number of

Vinette 2 stations in Ontario where, owing to a paucity of sample at some components or other causes, only three sites in the literature (Kant, East Sugar Island and Malcolm) may be utilized for specific comparisons.

Except for isolated trace occurrences, the early New York interior-exterior corded Vinette 1 pottery has not been reported for Ontario although types of subsequent Vinette 2 ware are distributed widely over the area in Point Peninsula context. Ritchie has introduced the theory (1949: 19ff) that the Vinette 2 element extant in New York state was derived from Ontario and hence, ultimately, from further north and west. The relative dominance of Vinette Complex Dentate and St. Lawrence Pseudo Scallop Shell at Kant, the Serpent Mounds habitation, west shore area and lower shell midden, as compared with New York percentages, might be taken to support the hypothesis but since these occurrences are apparently later than the same types at the Vinette site may rather suggest that the style achieved a greater popularity in Ontario in Middle Woodland times than in New York (cf. Emerson 1955: 38). However, the late persistence of Point Peninsula Rocker Stamped in New York (i.e., upper Vinette and Jack's Reef components) compared with the frequencies at Kant, the Serpent Mounds midden and lower East Sugar Island levels and near absence at the later Ontario Malcolm site, may be evidence of a later movement of major use of the type from north to south. In any case, what is known of Ontario Vinette 2 ware does not indicate that prototypes or origins are to be found in the province.

The sherd samples from the mounds, midden and habitation area at Serpent Mounds may be compared seriationally with one another and other components in order to construct a sequential arrangement, rather tenuous in part, which may be alleged to have chronological dimension. It must be emphasized that although the overall sequence seems plausible enough, the placement of features which produced only small samples, Mounds G and I especially, is inadequately documented. It is not suggested that use or occupation of the several features followed one upon another exclusively in order but rather that it seems not unreasonable to view them in a temporally overlapping sequence that probably spanned several hundreds of years.

One of the earliest reported Vinette producing components of specific comparative value in Ontario is the Kant site in the Ottawa Valley which Emerson (1955: 51) has correlated with the lower New York series as formulated by Ritchie and MacNeish 1949 on seriation evidence. As detailed in a previous section, the Kant series, and particularly the earlier portion, shows significant correspondence to that from the west shore area and habitation southwest of the mound group. If carbon date S-119 of 519 B.C. from the Donaldson site, on the east shore of Lake Huron in Bruce County, is accurate, the complex and Vinette-like ceramics recovered there are to be compared to the earlier Vinette 2 stations in Ontario. Wright (Wright and Anderson 1963) feels that the Donaldson material should be distinguished from Vinette 2 although 75 per cent of the ceramics are pseudo scallop shell or dentate stamped. Following in the Serpent Mounds site sequence it is easiest to fit the modest sample from Mound E which

compares rather unconformably with the Vinette 2 element of the Wickham site while lacking all of the later Point Peninsula types found there. The Serpent Mound has been C14 dated at A.D. 128 (M-850) and A.D. 302 (M-1105). As the small ceramic sample from Mound G seems more like that from the Serpent Mound than other features, it is associated subsequently in the sequence prior to the lower shell midden levels (1.5–3.0 feet) where the occurrence of Point Peninsula Rocker Stamped and St. Lawrence Pseudo Scallop Shell, particularly, seem to extend ceramic trends established in the allegedly older features. The proposed new pottery type, Rice Lake Banded, makes its first appearance in the lower midden, examples of which were also present in Mound I reinforcing adjudged relatedness evident also in the frequencies of other types in the mound. In the upper midden levels (0.0–1.5 feet) a slight decrease of Point Peninsula Rocker Stamped and more marked diminution of Vinette Complex Dentate and St. Lawrence Pseudo Scallop Shell may reflect the same general processes discussed above which were also evidently operating in the lower levels of nearby East Sugar Island where frequencies of those types diminish with the introduction of later Point Peninsula and Owasco types. None of the latter was found in the Serpent Mounds shell midden but the presence of Point Peninsula Corded indicates a terminal position in the site sequence. The type Rice Lake Banded belongs evidently in the later ceramic series judging from its association in the shell midden, occurrence in minor amounts, but untyped, in the East Sugar Island series (Ritchie 1949: 12–18, 21) and technological and stylistic resemblance to a small group of sherds from the late Ontario Malcolm site (Dailey and Wright 1955).

The small Late Woodland sample, for reasons already cited, is considered to be evidence of use of the site some time after and independent of the Vinette 2 occupation. Burial Pits Nos. 1, 2 and 3 pertain to the Late Woodland horizon and the deposit of some, at least, of the ceramics of the period found at the site may have been incidental to the construction of the graves. The Late Woodland material, occurring only superficially in the mounds and midden, included Glen Meyer ware, known largely at the present from the southwestern part of the province, examples duplicating ceramics from the Miller site in south-central Ontario and an undefined exterior corded-interior smooth group. The three varieties were found mixed stratigraphically in humus levels, together with Vinette 2 and a very few Iroquoian sherds.

VII *Radiocarbon Samples and Dates*

Three charcoal samples from the Serpent Mounds site were submitted for analysis, through J. B. Griffin, to the Memorial-Phoenix Project Radiocarbon Laboratory, University of Michigan, the results of which may be tabulated as follows:

RADIOCARBON DATES FROM SERPENT MOUNDS SITE

Sample	Age	B.P.	+ or - range	Calendar Date
Mound E or Serpent Mound M-850	1830	1958	200	A.D. 128
Shell Midden M-1104	2020	1962	150	58 B.C.
Mound E or Serpent Mound M-1105	1660	1962	150	A.D. 302

Provenance data for these samples are as follows:

M-850 (Mound E or Serpent Mound)

Sample was part of the carbonized remains of two small logs (probably *Pinus strobus*; see discussion in the section on Serpent Mound E) found in direct association with a partial *in situ* cremation (Burial No. 4; Chapter III, Section 1, Plate 10) encountered near the eastern end of Mound E. This primary inclusive partial cremation, in a flexed position, lay on the right side in mound fill 2. 1 feet below the mound surface. It seems obvious that the charcoal represented the remains of logs used to cremate this individual.

The age of the sample indicates the number of years ago that the burial was placed in the mound and, therefore, the age of the structure at this point.

Sample M-850 has been published in Crane and Griffin 1959 and Johnston 1959.

M-1104 (Shell Midden)

A charcoal sample, not identified botanically, taken from the shell midden excavation (square 60-S-2), as seen in Plate 49, at Serpent Mounds site. The top of the charcoal occurred at a depth of 20 inches below the surface beneath, from top to bottom in the profile, a five-inch thick sod zone, a shell layer 12 inches in depth and a three-inch thick shell-flecked layer of dark soil immediately beneath which the charcoal occurred. The charcoal rested upon yellow sandy loam, everywhere the sterile foundation of the midden. Provenance of the sample suggests that it dates construction of the midden at this point or, perhaps better, indicates the time of the earliest shell accumulation. The charcoal was derived from the level of the old ground surface upon which the shell layer rested.

Analysis of this sample provided the only direct means of establishing a chronological reference for the midden, particularly useful in allowing it to be related in time to other features at the site, notably dated Mound E.

Sample M-1104 has been published in Crane and Griffin 1963.

M-1105 (Mound E or Serpent Mound)

Sample taken from an extensive concentration of pure charcoal, not identified botanically, that extended through two five-foot excavational squares (C12d 10-1 and C12c 10-10) of Mound E. This grid location was near the southern extent of the mound and approximately 60 feet east of its western extremity (Plate 6). The charcoal mass evidently represented the remains of several logs or a portion of a tree buried in mound fill an average of two feet below the surface and approximately one and a half feet above the buried old sod layer. At the same time, the writer admits to some puzzlement as to how this obviously primary mass could have been burnt *in situ* without leaving more evidence of the process. Miscellaneous cultural refuse was associated.

Sample M-1105 has been published in Crane and Griffin 1963.

This sample, like M-850 from the eastern end of the mound, dates construction of that section of the mound from which it was recovered. The relationship between the two dates would appear to be relevant to the question of the elapsed time of construction (see Chapter III, Section 1) as they were taken from points near either end of the mound separated by a distance of some 111 feet.

There is nothing in the cultural or other evidence to suggest that exceptions to or modifications of these radiocarbon results are in order. The two samples from Mound E (M-850 and M-1105) exhibit a range between their mean values of 174 years but could be regarded as contemporary if adjusted appropriately (each in the opposite direction) within the indicated ranges of probable error. However, to do so seems unwarranted, especially in view of the intermittency and extended period of mound construction already inferred from the burial content (Chapter III, Section 1). Given a choice, the writer would regard the 174-year difference as maximal. The outside limits of the one-sigma ranges shown by the two samples combined, from the earliest to the latest, extend from 72 B.C. to A.D. 452; the median date in this period is A.D. 190.

Nor can the writer find basis in the cultural or stratigraphic circumstances to question the validity or accuracy of shell midden date M-1104 at 58 B.C. It corroborates placement of the lower midden levels as judged by internal and comparative seriation evidence. The difference between the mean value of the midden sample and the later Mound E date (M-1105) is 360 years (58 B.C. to A.D. 302), a range with a median at A.D. 122.

The average of the mean values of the three C14 dates for the site comes to A.D. 124, within four years of the age of Mound E sample M-850.

VIII *Summary and Conclusion*

Any statement drawing cultural conclusions from the findings at Serpent Mounds site must rest heavily upon the ceramics recovered from the

various features, a fact which will be obvious to the reader who has managed to peruse the foregoing pages. It is also quite clear that burials were encountered in some quantity in the mounds but, although forming a large segment of the collection, are of limited value in assessing the cultural status of the group.

The limited lithic inventory, of both ground and chipped pieces, recovered from the mounds and habitations presents in general an anachronistic Laurentian typological range but is not thought to be the remnants of an earlier occupation (e.g., the red slate point with Burial No. 28). On the other hand, seemingly early lithic types are rather commonly associated with Vinette ware producing stations (e.g., Kant site) in Ontario. The fact is taken to indicate the partial derivation of the Point Peninsula culture; as expressed at Serpent Mounds the Laurentian type lithic assemblage in the habitation southwest of the mound group, the most adequate sample anywhere on the site, is further suggestion of the early status of that feature.

The bone artifacts at the site are a generalized lot of little specific diagnostic use; in any case, the collection as a whole and certain pieces in particular (e.g. the unilaterally barbed harpoon from the midden) fit well enough in a Point Peninsula context.

Detailed description of the ceramic yield from the various features at the site has been provided together with an assessment of the implications for cultural and chronological relationships and this data viewed, especially in Chapter VI, with reference to the general sequence developed for the northeast. Briefly, it has been concluded that the habitation area southwest of the mound group exhibits a ceramic inventory suggesting a similarity to the Kant site and its temporal priority within the Serpent Mounds site, a judgement reinforced by the lithic assemblage therefrom. Seriation analysis of the shell midden ceramics has shown, in the lower levels, a comparability to the early habitation area followed by later development aligning the sample with that from the lower and middle levels of the East Sugar Island midden, both collections containing types in the proportions seen also in the middle Point Peninsula series in New York. Later Vinette 2 ware types (or the early interior-exterior corded Vinette 1 type) were absent at Serpent Mounds, in the midden or elsewhere, while a small Late Woodland sample and a mere trace of Iroquoian pottery from superficial levels has been interpreted as evidence of slight use of the site sometime after and not associated with or a direct development from the Vinette 2 occupation revealed at this station.

What has been regarded as a discrete component at the site, although there is no stratigraphic or other direct linkage with other features, are three ossuary-like mass burial pits not far north of the mound group (Chapter V). Here, in each grave, were the partial secondary remains of a number of individuals and a very few sherds exclusively of Late Woodland type, upon which basis the graves are assigned to that period.

The mound group is perhaps the most obvious or salient trait exhibited by the site and, at the same time, among the most anomalous of its characteristics when viewed in the context of known Ontario Woodland culture. Aside from the mounds at four other components on Rice Lake and firm

but fragmentary reports of about an equal number of mounds along the southern border of the province, such structures are not known for southern Ontario. That the mounds obscurely referred to in the literature are Woodland is largely presumptive as the paucity of material found in them has hardly furnished a basis for judgement or allowed the demonstration of specific cultural affinity.

It obviously follows, on the same grounds, that the burial practices and patterns observed within and beneath the mounds yield little material for direct or comparative inference. While the fact is regrettable, in one sense, it serves at the same time to point up clearly the unique nature of the components with mounds: Suffice it to say that both primary and secondary interments were discovered in the Serpent Mound (Mound E) in the fill and below the structure in pits. Forty per cent of the burials, chiefly those in sub-mound pits, were accompanied by grave goods, often in the form of shell disc beads and animal bone to name the most common (see summary analysis in introduction to Burial and Grave Goods portion of Chapter III). Auxiliary Mounds G and I covered mass graves containing both primary and secondary burials with no formal grave goods. Limited ceramic material was discovered in the mounds, rarely with burials and at random in the carried earth, being included in both places, no doubt, fortuitously. What little other artifactual material was taken from the fill of the mounds found its way there in the same fashion.

Again, resemblances in burial practices and grave goods of a general rather than specific nature may be seen with components reported by Ritchie (1944). While there are points of similarity there are also many traits not shared with the New York findings. As already noted, mounds have been suspected but not formally regarded as a part of the Point Peninsula culture as defined heretofore, but now the evidence from Serpent Mounds site and other components on Rice Lake demonstrates that mound building should be added to the cultural inventory of the complex at least as it is expressed in parts of southern Ontario. The following list of burial traits at Serpent Mounds shows parallels in New York Point Peninsula and suggests some degree of identity and relatedness, although it is to be emphasized that a much longer listing could be compiled to demonstrate that the connection cannot be regarded as an intimate one.

Traits at Serpent Mounds found also in New York Point Peninsula include single and multiple flexed and bundle burials in separate or common graves, ossuary burial (Mounds G and I), burial in pits, cremation, dog remains associated with burials; animal bone in graves (including mandibles), beaver teeth in graves, ground bear canine (in one grave), grave goods under skull and in front of face, *Marginella* and *Olivella* beads and marine shell objects (reported, in part, by Montgomery 1910 from the fill of the Serpent Mound), concretions and fossils in grave, cache blades, rolled foil and barrel-shaped copper beads and a rectanguloid gorget (Mound G).

To leave no doubt as to the divergences between the components described by Ritchie and the Serpent Mounds burial complex, there may be mentioned the lack at the latter site (among numerous other specific

items) of: common use of hematite in graves, graves wholly or partially slab or boulder covered (notwithstanding report of Montgomery) and an array of exotica including antler hafted beaver incisors, antler combs, harpoons, various antler forms (drifters, projectile points, etc.), a variety of blades, birdstones and pottery or steatite pipes (but note steatite fragment from Mound G area).

With respect to the important midden deposit at Serpent Mounds, one is even more hard put to find comparative structures in Ontario. In fact, aside from notices of the less extensive accumulation on East Sugar Island and at Cameron's Point (both at Rice Lake), a search of the literature has failed to reveal a single additional instance of a similar deposit (cf. Wintenberg, 1908: 39).

The presence, then, of both mounds with burials and shell middens at these Rice Lake components in an enclave in the midst of a region nearly or completely devoid, respectively, of those features lends a unifying element to the complex.

Certain aspects of the structure and content of the shell midden were dwelt upon (Chapter IV) to point out evidence bearing upon the nature of the use, accumulation and occupancy of that structure, while a review of regional ecology (Chapter I) attempted, by projection from the archaeological findings and relevant collateral data, to reconstruct the floral and, especially, faunal resources available to these people. The magnitude of the midden, containing a great absolute and relative abundance of mussel shells, in the face of a scarcity of other food remains or the equipment required to pursue other techniques (notably fishing and, particularly, hunting), has led to the conclusion that the diet of these people, at least while occupying the midden, was confined very largely to shellfish. The likelihood seems the more anomalous in view of the location in an area from which, all evidence indicates, a relatively diverse and plentiful food supply could have been provided by hunting, fishing and other gathering techniques. Some practice of agriculture seems possible climatically but cannot be demonstrated archaeologically. That major segments of the full range of resources were not utilized is most unlikely and provides further suggestion, in addition to those presented in the earlier section, that occupancy of the midden and an attendant primary dietary dependence upon shellfish, as adduced, was an intermittent, and probably seasonal, practice. That use of the midden continued over a long period of time is seen from the C14 date of 58 B.C. (M-1104) in the lower part of the structure in company with a ceramic assemblage most like that in the apparently earlier habitation southwest of the mound group. In the upper levels of the midden the ceramic series shows development to comparability with the complex contained in the mounds, to which may be attached the Serpent Mound dates of A.D. 128 (M-850) and A.D. 302 (M-1105).

A summary of the history of Serpent Mounds site would begin with the first occupation at least by early Middle Woodland times of a hunting camp, or perhaps a small settlement, by a Vinette 2 bearing group that probably did not bury their dead in mounds. Some time thereafter, and perhaps prior to any mound construction or certainly by the middle of the

first century B.C., periodic shellfish gathering and resultant midden accumulation was underway along the east shore of the point. By at least the first century A.D., however, burials were being made in and under mounds and grave goods, often including shell beads and animal bones, placed with some individuals. During this time, the midden accumulation continued to grow, but with little nonceramic artifactual additions, indicating that the people attracted to this ceremonial centre over the years were active gatherers of shellfish while there, to the apparent near exclusion of other food-producing techniques. After a long period of probably intermittent ceremonial activity, to at least the third century A.D., by Point Peninsula peoples, the location was given up, in later Middle Woodland times, to any large scale use. Subsequently, during Late Woodland times, only occasional small group visits occurred, some for the purpose of burying the disarticulated remains of a number of individuals in ossuary pits near the older, now abandoned, mound group.

Bibliography

ADAMS, WILLIAM RICHARD, 1956

"The Rice Lake Serpent Mound Group." *Royal Ontario Museum Bulletin of the Division of Art and Archaeology*, No. 24, pp. 14-19: Toronto.

BEAUBIEN, PAUL L., 1953

"Cultural Variation Within Two Woodland Mound Groups of North-eastern Iowa." *American Antiquity*, Vol. 19, No. 1, pp. 56-66. Salt Lake City.

BENNETT, JOHN W., 1945

Archaeological Explorations in Jo Daviess County, Illinois. University of Chicago Publications in Anthropology: Archaeological Series. Chicago.

BOUGHNER, C. C., R. W. LONGLEY and M. K. THOMAS, 1956

Climatological Summary for Selected Meteorological Stations in Canada, Vol. 3. Canadian Dept. of Transport, Meteorological Div. Toronto.

BOYLE, DAVID, 1897

"Mounds." *Annual Archaeological Report, 1896-97, Appendix to the Report of the Minister of Education, Ontario*, pp. 14-41. Toronto.

BYERS, DOUGLAS S., 1946

"The Environment of the Northeast." In *Man in Northeastern North America* (Frederick Johnson, ed.). Papers of the Robert S. Peabody Foundation for Archaeology, Vol. 3, pp. 3-32. Andover, Mass., Phillips Academy.

CHAPMAN, L. J., and D. F. PUTNAM, 1951

The Physiography of Southern Ontario. Ontario Research Foundation, University of Toronto Press.

CRANE, H. R., and JAMES B. GRIFFIN, 1959

"University of Michigan Radiocarbon Dates IV." *Radiocarbon*, American Journal of Science Supplement, Vol. 1, pp. 173-198. New Haven.

- 1963
 "University of Michigan Radiocarbon Dates VIII." *Radiocarbon*, American Journal of Science. Radiocarbon Supplement, Vol. 5, pp. 228–253. New Haven.
- DAILEY, ROBERT C., and JAMES V. WRIGHT, 1955
 "The Malcolm Site: A Late Stage of the Middle Point Peninsula Culture in Eastern Ontario." *Transactions of the Royal Canadian Institute*, Vol. 31, Part 1, pp. 3–23.
- DICE, LEE R., 1943
The Biotic Provinces of North America. University of Michigan Press. Ann Arbor.
- DRIVER, HAROLD E., and WILLIAM C. MASSEY, 1957
 "Comparative Studies of North American Indians." *Transactions of the American Philosophical Society*, N.S., Vol. 47, Part 2, pp. 165–456. Philadelphia.
- EMERSON, J. NORMAN, 1955
 "The Kant Site: A Point Peninsula Manifestation in Renfrew County, Ontario." *Transactions of the Royal Canadian Institute*, Vol. 31, Part 1, pp. 24–66.
- GREENMAN, EMERSON F., 1952
Guide to Serpent Mound (Revised). The Ohio State Archaeological and Historical Society. Columbus.
- GRIFFIN, JAMES B., 1943
The Fort Ancient Aspect. University of Michigan Press. Ann Arbor.
- 1960
 "Climatic Change: A Contributory Cause of the Growth and Decline of Northern Hopewellian Culture." *The Wisconsin Archaeologist*, Vol. 41, No. 2, pp. 21–33. Milwaukee.
- HINSDALE, W. B., 1925
Primitive Man in Michigan. Michigan Handbook Series, No. 1. University of Michigan. Ann Arbor.
- HOLMES, WILLIAM H., 1886
 "Ancient Pottery of the Mississippi Valley." *Bureau of American Ethnology, 4th Annual Report*, pp. 361–436. Washington, D.C.
- JOHNSTON, RICHARD B., 1959
The 1958 Interim Report on the Serpent Mounds Site. Art and Archaeology Division, The Royal Ontario Museum. Toronto. mimeo.
- JONES, VOLNEY H., 1948
 "Notes on Indian Maize." *Pennsylvania Archaeologist*, Vol. 18, Nos. 1–2, pp. 23–24.
- n.d. University of Michigan Museum of Anthropology Ethnobotanical Laboratory Report 303, Laboratory No. 4012. Unpublished.
- JURY, W. WILFRID, and ELSIE MCLEOD JURY, 1952
 "The Burley Site." *Ontario History*, Vol. 44, No. 2, pp. 57–75.
- KENYON, WALTER A., 1959a
 "The Inverhuron Site." *Occasional Paper 1, Art and Archaeology Division, The Royal Ontario Museum*. Toronto.
- 1959b
 "A Late Woodland Site Near Pickering." *Ontario History*, Vol. 51, No. 1, pp. 58–59.
- 1960
 "The Miller Site—1959." *Ontario History*, Vol. 52, No. 1, pp. 63–67.
- KIDD, KENNETH E., 1954
 "A Woodland Site Near Chatham, Ontario." *Transactions of the Royal Canadian Institute*, Vol. 30, Pt. 2, pp. 141–178.

- LEE, THOMAS E., 1958
 "Appendix." In "The Boys and Barrie Sites" by Frank Ridley. *The Ontario Archaeological Society, Publication No. 4*, pp. 39-40.
- 1960
 "The Lucas Site, Inverhuron, Ontario." *National Museum of Canada Bulletin No. 167*, Anthropological Series No. 48, pp. 29-65. Ottawa.
- LEWIS, THEODORE H., 1887
 "Snake and Snake-like Mounds in Minnesota." *Science*, Vol. 9, No. 220, pp. 393-394. New York.
- MONTGOMERY, HENRY, 1910
 "Recent Archaeological Investigations in Ontario." *Transactions of the Canadian Institute*, Vol. 9, Pt. 1, pp. 1-12.
- PEET, STEPHEN D., 1903
The Mound Builders: Their Works and Relics (2nd. ed.). Office of the American Antiquarian. Chicago.
- PUTNAM, DONALD F. (editor), 1952
Canadian Regions. J. M. Dent and Sons. Toronto-Vancouver.
- PUTNAM, FREDERIC W., 1890
 "The Serpent Mound of Ohio." *Century Illustrated Monthly Magazine*, Vol. 39, pp. 871-888.
- RANDALL, E. O., 1905
The Serpent Mound, Adam County, Ohio. Ohio State Archaeological and Historical Society. Columbus.
- RIDLEY, FRANK, 1958
 "The Boys and Barrie Sites." *The Ontario Archaeological Society, Publication No. 4*, pp. 18-42.
- RITCHIE, WILLIAM A., 1944
The Pre-Iroquoian Occupations of New York State. Memoir No. 1, Rochester Museum of Arts and Science.
- 1949
 "An Archaeological Survey of the Trent Waterway in Ontario, Canada, and its Significance for New York State Prehistory." *Research Records, Rochester Museum of Arts and Sciences*, No. 9, pp. 1-52.
- 1955
 "Recent Discoveries Suggesting an Early Woodland Burial Cult in the Northeast." *Circular 40, New York State Museum and Science Service*, The University of the State of New York. Albany.
- 1961
 "A Typology and Nomenclature for New York Projectile Points." *New York State Museum and Science Service, Bulletin No. 384*. Albany.
- 1949 (with Richard S. MacNeish)
 "The Pre-Iroquoian Pottery of New York State." *American Antiquity*, Vol. 15, No. 2, pp. 97-124. Menasha, Wisc.
- RITZENTHALER, ROBERT E., 1947
 "Vilas County Serpent Mound." *The Wisconsin Archaeologist*, Vol. 28 (N.S.), No. 3, pp. 54-56. Milwaukee.
- ROWE, CHANDLER W., 1956
 "The Effigy Mound Culture of Wisconsin." *Milwaukee Public Museum, Publications in Anthropology*, No. 3.
- SHEPARD, ANNA O., 1961
Ceramics for the Archaeologist. Carnegie Institution of Washington, Publication 609. Washington, D.C.

- SQUIER, EPHRAIM G., and EDWIN H. DAVIS, 1848
Ancient Monuments of the Mississippi Valley. Smithsonian Contributions to Knowledge, Vol. 1. Washington, D.C.
- WILLOUGHBY, CHARLES C., 1919
"The Serpent Mound of Adams Co., Ohio." *American Anthropologist*, Vol. 21, No. 2, pp. 153-164. Menasha, Wisc.
- WINTENBERG, WILLIAM J., 1908
"The Use of Shell by Ontario Indians." *Annual Archaeological Report, Ontario*, 1907, pp. 38-90.
- WRIGHT, GEORGE FREDERICK, 1909
"A New Serpent Mound in Ohio." *Ohio Archaeological and Historical Publication*, Vol. 18, No. 1, pp. 1-12. Columbus.
- WRIGHT, JAMES V., 1961
"Early Iroquois Development in Southern Ontario." *Eastern States Archaeological Federation, Bulletin No. 20*, p. 10. Berwyn, Pa.
- and JAMES E. ANDERSON, 1963
"The Donaldson Site." *National Museum of Canada, Bulletin No. 184*. Ottawa.

LOCATION OF
SERPENT MOUNDS
SITE

IN

PETERBOROUGH COUNTY
ONTARIO

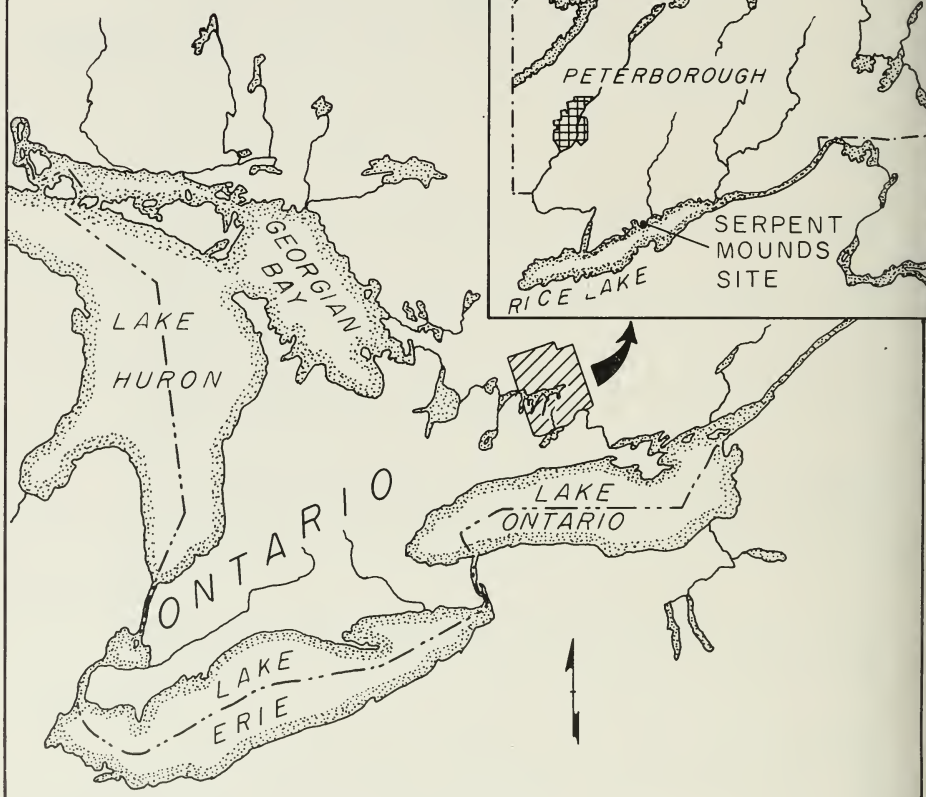


Figure 1

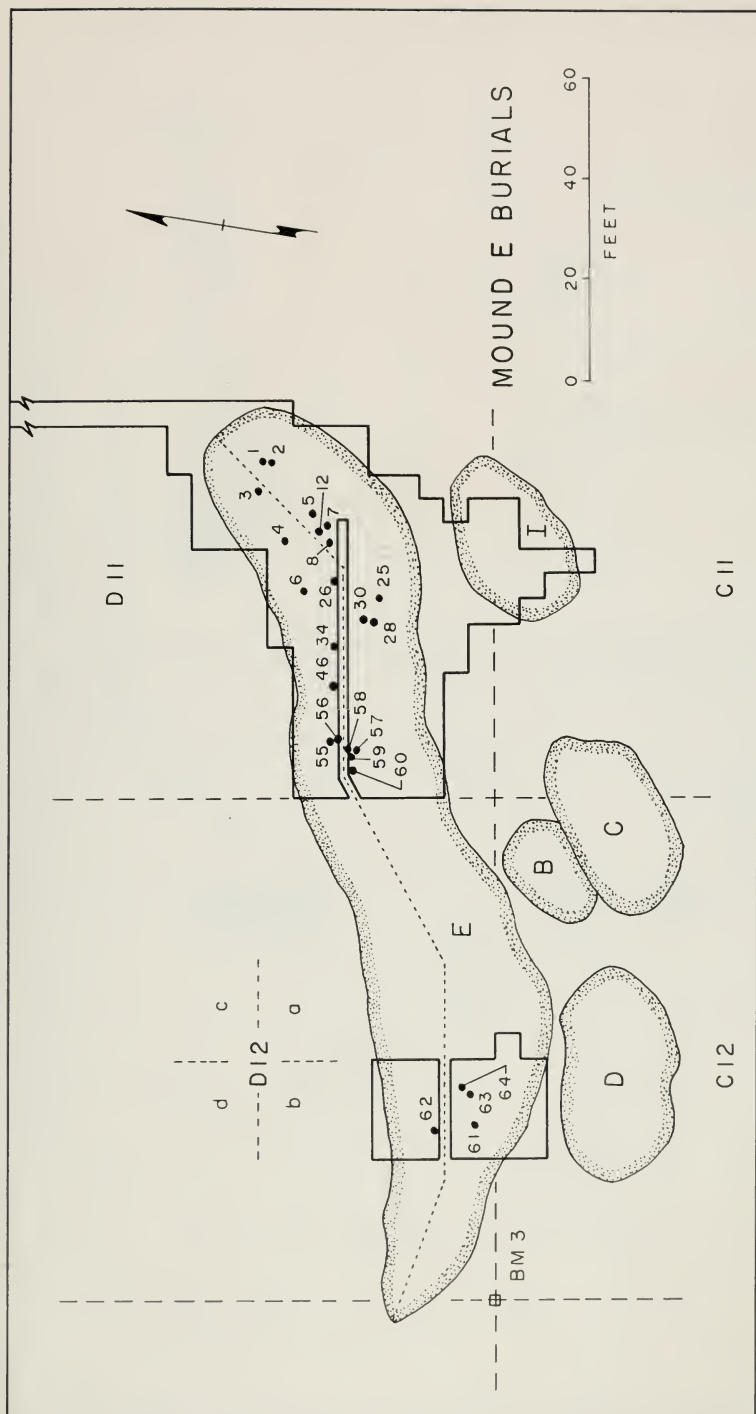


Figure 4

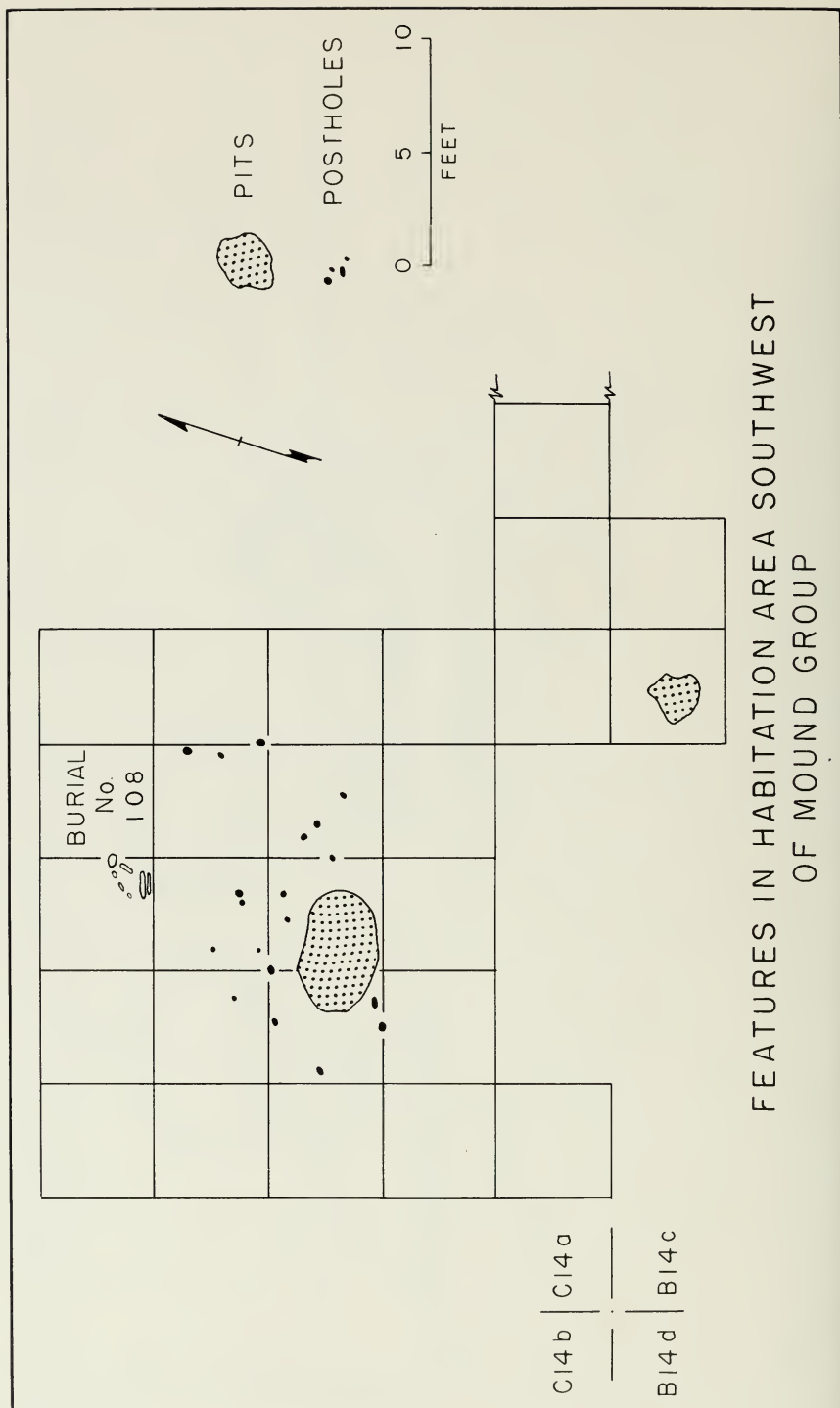


Figure 5

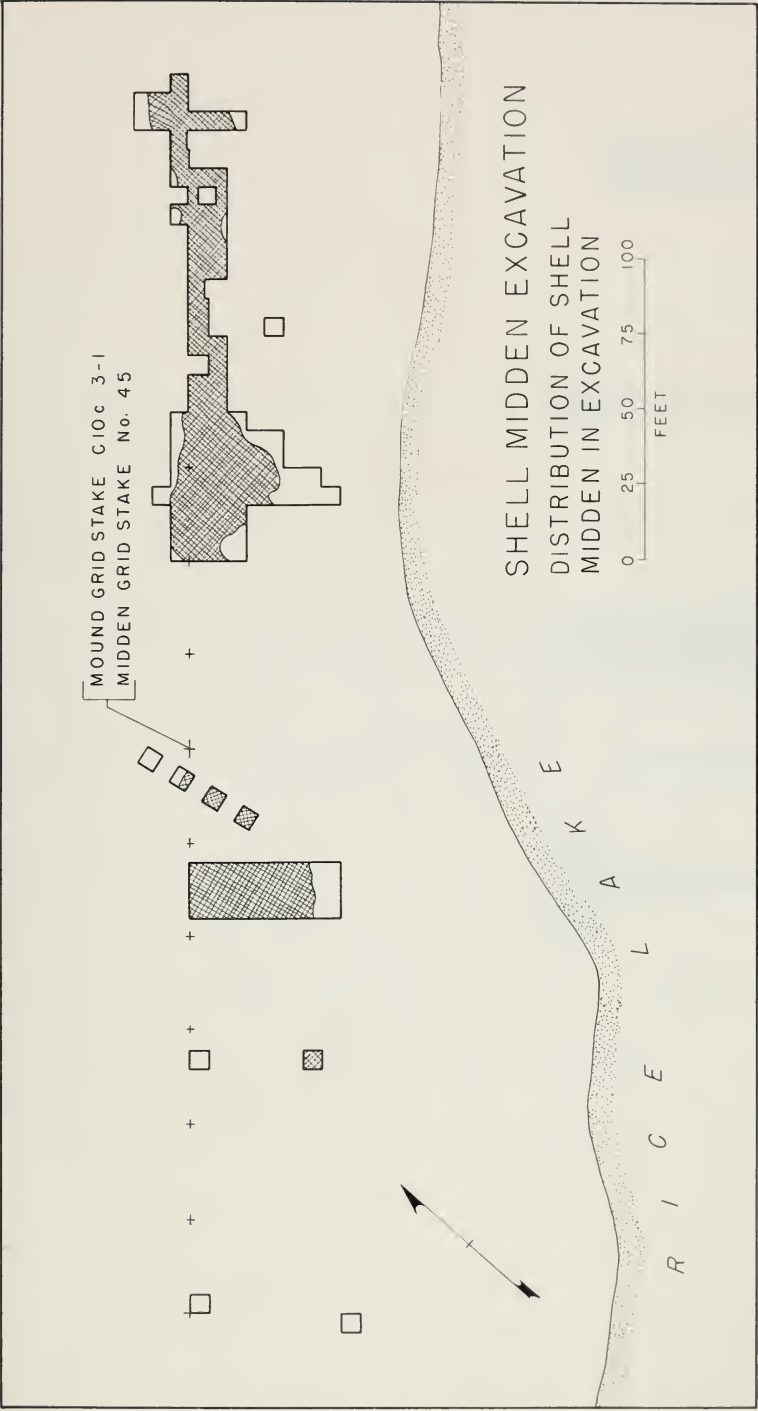
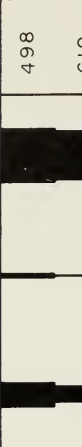
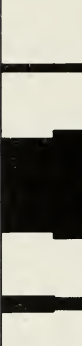
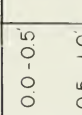
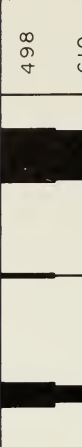
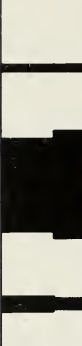
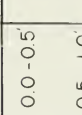
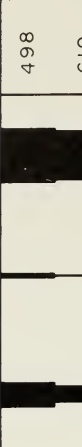
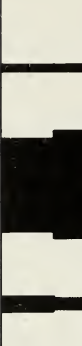
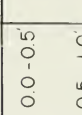
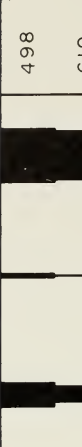
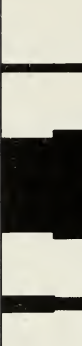
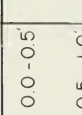
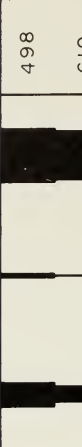
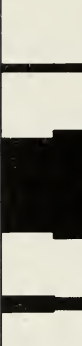
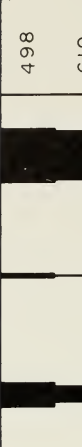
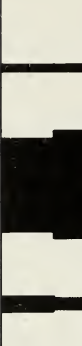
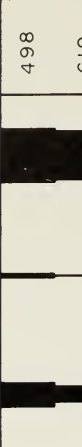


Figure 6

Figure 7

0.0-0.5'								498	
0.5-1.0'								619	
1.0-1.5'								213	
1.5-2.0'								213	
2.0-2.5'								74	
2.5-3.0'								27	
								9	
%and TOTAL No	2% 29	9% 123	6% 91	48% 694	2% 27	7% 105	4% 6	25% 365	100% 1440

SHELL MIDDEN

 INTERIORS: Channelled: 75% (1084)
 Smooth: 17% (248)

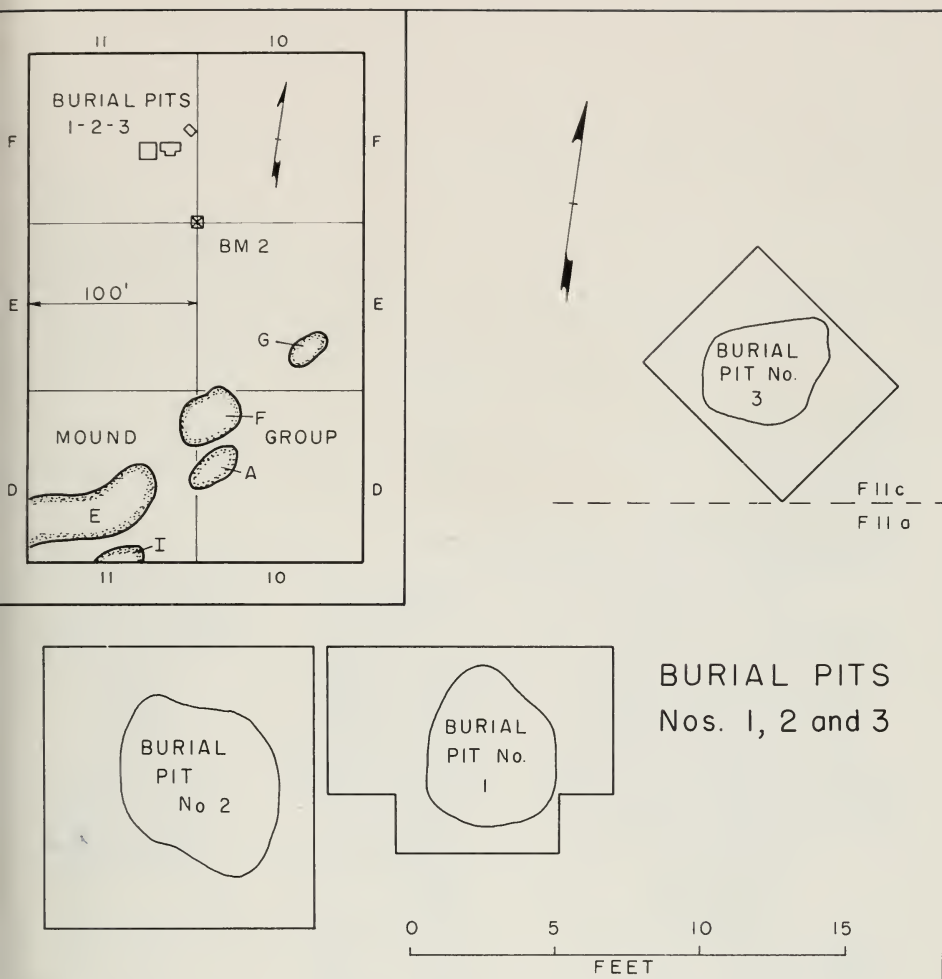


Figure 8

Table 1

SERPENT MOUNDS SITE

MOUND DIMENSIONS AND ORIENTATION

<i>Mound</i>	<i>Length and Orientation</i>	<i>Breadth and Orientation</i>	<i>Approximate Maximum Height</i>
A	41 feet, NE-SW	21 feet, NW-SE	3.0 feet
B	23 feet, NE-SW	15 feet, NW-SE	2.0 feet
C	39 feet, NE-SW	21 feet, NW-SE	3.0 feet
D	42 feet, ENE-WSW	23 feet, NNW-SSE	3.0 feet
E (Serpent)	Total along centre-line: 193.88 feet, various orientations but generally NE-SW.	average of 25 feet, maximum of 33 feet, orientation: see Fig. 2.	average about 3.5-4.0 feet, maximum: 5.0 to 6.0 feet
F (Egg)	48 feet, NE-SW	37 feet, NW-SE	4.5 feet
G	30 feet, NE-SW	19 feet, NW-SE	1.2 feet
H	35 feet, N-S	34 feet, E-W	2.5 feet
I	34 feet, NE-SW	23 feet, NW-SE	1.5 feet

Table 2

SERPENT MOUNDS SITE

SERPENT MOUND BURIAL SUMMARY

<i>Burial Number</i>	<i>Sub-mound pit</i>	<i>Mound fill</i>	<i>Primary</i>	<i>Secondary</i>	<i>Grave goods</i>	<i>Remarks</i>
1*	X		X		X	Adult
2*	X		X		X	Juvenile
3	X		X			Infant
4*		X	X			Adult, partial cremation
5	X		X			Infant with B #7 & 12
6	X		X		X	Adult
7*	X			X	X	Adult with B #5 & 12
8		X	X			Adult, partial cremation
12	X		X			Infant with B #5 & 7
25		X		X		Adult long bones
26		X		X		Juvenile
28*	X		X		X	Adult
30		X	X			Infant
34*	X			X		Adult
46*	X		X			Adult
55*		X	X			Adult
56*		X	X		X	Adult
57*		X	X			Juvenile
58*		X		X		Juvenile
59*		X		X		Infant
60*	X		X		X	Juvenile
61		X	X		X	Adult, partial cremation
62		X	X		X	Infant, partial cremation
63		X		X		Adult
64*	X		X		X	Adult
Total: 25	12	13	18	7	10	

*Illustrated in plates.

NOTE: Burial No. 31, the disturbed remains of at least three individuals, is not included in the above tabulation. Similar bone jumbles found reinterred in backfilled intrusions elsewhere in the mound were not assigned burial numbers.

Table 3

CERAMIC ANALYSIS: SERPENT MOUNDS SITE: SERPENT MOUND (E)

<i>Types</i>	<i>Surficial zone*</i>	<i>Fill</i>	<i>Total</i>	and	%	
Vinette Dentate	4	14	18		21	
Vinette Complex Dentate	3	13	16		19	
Point Peninsula Corded		1	1		1	
Point Peninsula Rocker Stamped	7	13	20		23	
Point Peninsula Plain	3		3		4	
St. Lawrence Pseudo Scallop Shell	3	16	19		22	
Incised	1	8	9		10	
	—	—	—		—	
Total:	21	65	86		100	
Unidentifiable Vinette 2:			68†			
Interiors:	Channelled		52		60	
	Smooth		18		21	
	Not Preserved		16		19	
			—		—	
	Total:		86		100	
<i>Bodysherds</i>	<i>Surface Finish</i>	<i>Surficial zone*</i>	<i>Fill</i>	<i>Total</i>	and	%
Exterior:	Corded		16	16		8
	Smoothed Cords			0		
	Smooth	8	168	176		84
	Comb or Brush		16	16		8
		—	—	—		—
	Total:	8	200	208		100
Interior:	Smooth	3	59	62		30
	Channelled	3	52	55		26
	Not Preserved	2	89	91		44
		—	—	—		—
	Total:	8	200	208		100

*Surficial 6 inches of mound (humus); Late Woodland material discussed in Chapter VI.

†Including 65 sherds, probably from one vessel, discussed in the section headed "Unidentifiable Vinette 2 sherds."

Table 4

SERPENT MOUNDS SITE

MOUND G BURIAL SUMMARY

<i>Burial Number</i>	<i>Primary</i>	<i>Secondary</i>	<i>Immature</i>	<i>Mature</i>	<i>Position</i>
109	X		X		face up extended
110		X		X	bundle
111		X		X	bundle?
112		X		X	bundle?
113		X		X	bundle
114	X		X		extended
115		X		X	bundle
116	X			X	partly flexed
117		X		X	articulated torso
118	X			X	face down flexed
119	X			X	flexed
120	X*			X	face down flexed
121		X		X	skull and jaw only
122		X*	X		disturbed area
123		X*		X	disturbed area
124		X*		X	disturbed area
125		X*		X	legs only bundle
126		X		X	vertebrae only
Total: 18	6	12	3	15	

*Disturbed area.

Table 5

CERAMIC ANALYSIS: SERPENT MOUNDS SITE: MOUND G

<i>Types</i>	<i>Surficial zone*</i>	<i>Fill</i>	<i>Total</i>	and	%	
Vinette Dentate	2	3	5		19	
Vinette Complex Dentate	2	2	4		15	
Point Peninsula Corded			0			
Point Peninsula Rocker Stamped	3	7	10		37	
Point Peninsula Plain	1	1	2		7	
St. Lawrence Pseudo Scallop Shell	3	1	4		15	
Incised	2		2		7	
	—	—	—		—	
Total:	13	14	27		100	
Unidentifiable Vinette 2:			11			
Interiors:	Channelled		22		82	
	Smooth		2		7	
	Not Preserved		3		11	
			—		—	
Total:			27		100	
<i>Bodysherds</i>	<i>Surface Finish</i>	<i>Surficial zone*</i>	<i>Fill</i>	<i>Total</i>	and	%
Exterior:	Corded	70†	28	98		59
	Smoothed Cords	3		3		2
	Smooth	37	22	59		36
	Comb or Brush	1	5	6		3
		—	—	—		—
Total:		111	55	166		100
Interior:	Smooth	111†	48	159		96
	Channelled		6	6		3
	Not Preserved		1	1		1
		—	—	—		—
Total:		111	55	166		100

*Surficial 6 inches of mound (humus); Late Woodland material discussed in Chapter IV.

†High number and percentage due to Late Woodland sherds surficially.

Table 6

SERPENT MOUNDS SITE
MOUND I BURIAL SUMMARY

<i>Burial Number</i>	<i>Primary</i>	<i>Secondary</i>	<i>Immature</i>	<i>Mature</i>	<i>Position</i>
9		X		X	disturbed area*
10		X		X	*
11		X	X		*
13		X		X	*
14		X		X	skull & legs
15		X		X	*
16	X			X	face down flexed
17		X		X	*
18		X		X	*
19		X		X	*
20		X		X	*
21		X		X	*
22	X			X	face down flexed
23		X	X		*
24	X			X	partly flexed
27		X	X		*
29		X		X	*
32	X			X	partly flexed
35		X	X		*
36		X		X	bundle
37	X			X	legs under flexed
38		X		X	bundle
39		X		X	bundle
40		X	X		complete cremation
41		X	X		*
42		X	X		*
43		X	X		*
44		X		X	*
45	X		X		face down flexed
Total: 29	6	23	9	20	

*Disarticulated.

Table 7

CERAMIC ANALYSIS: SERPENT MOUNDS SITE: MOUND I

<i>Types</i>	<i>Surficial zone*</i>	<i>Fill</i>	<i>Total</i>	and	%	
Vinette Dentate			0			
Vinette Complex Dentate	4		4		22	
Point Peninsula Corded			0			
Point Peninsula Rocker Stamped	3	6	9		50	
Point Peninsula Plain			0			
St. Lawrence Pseudo Scallop Shell	1	2	3		17	
Incised			0			
Rice Lake Banded		2	2		11	
	—	—	—		—	
Total:	8	10	18		100	
Unidentifiable Vinette 2:			16			
Interiors:	Channelled		13		72	
	Smooth		4		22	
	Not Preserved		1		6	
			—		—	
	Total:		18		100	
<i>Bodysherds</i>	<i>Surface Finish</i>	<i>Surficial zone*</i>	<i>Fill</i>	<i>Total</i>	and	%
Exterior:	Corded			0		
	Smoothed Cords			0		
	Smooth	9	15	24		80
	Comb or Brush	3	3	6		20
		—	—	—		—
	Total:	12	18	30		100
Interior:	Smooth	3	4	7		23
	Channelled	6	8	14		47
	Not Preserved	3	6	9		30
		—	—	—		—
	Total:	12	18	30		100

*Surficial 6 inches of mound (humus); Late Woodland material discussed in Chapter VI, Section 2.

Table 8

CERAMIC ANALYSIS: SERPENT MOUNDS SITE:
WEST SHORE AREA TEST SQUARES

<i>Types</i>		<i>Number</i>	<i>and</i>	<i>%</i>
Vinette Dentate		2		7
Vinette Complex Dentate		9		32
Point Peninsula Corded		0		
Point Peninsula Rocker Stamped		4		14
Point Peninsula Plain		0		
St. Lawrence Pseudo Scallop Shell		10		36
Incised		3		11
Total:		28		100
Unidentifiable Vinette 2:		8		
Interiors:	Channelled	15		54
	Smooth	6		21
	Not Preserved	7		25
Total:		28		100
<i>Bodysherds</i>	<i>Surface Finish</i>	<i>Number</i>	<i>and</i>	<i>%</i>
Exteriors:	Corded	2		7
	Smoothed Cords	0		
	Smooth	24		80
	Comb or Brush	4		13
Total:		30		100
Interiors:	Smooth	9		30
	Channelled	1		3
	Not Preserved	20		67
Total:		30		100

Table 9

CERAMIC ANALYSIS: SERPENT MOUNDS SITE:
HABITATION AREA SOUTHWEST OF MOUND GROUP

<i>Types</i>	<i>0.0-0.5 ft.</i> (plough zone)	<i>0.5-1.7 ft.</i> (pits)	<i>Total</i>	and	%
Vinette Dentate	2		2		.65
Vinette Complex Dentate	34	9	43		14.00
Point Peninsula Corded			0		
Point Peninsula Rocker					
Stamped	36	16	52		17.00
Point Peninsula Plain	1		1		.32
St. Lawrence Pseudo					
Scallop Shell	147	49	196		64.00
Incised	11		11		4.00
Total:	231	74	305		100.00
Unidentifiable Vinette 2:			92		
Interiors:	Channelled		216		71
	Smooth		44		14
	Not Preserved		45		15
	Total:		305		100
<i>Bodysherds</i>	<i>Surface Finish</i>	<i>0.0-0.5 ft.</i> (plough zone)	<i>0.5-1.7 ft.</i> (pits)	<i>Total</i>	and %
Exterior:	Corded	30	5	35	11
	Smoothed Cords	1	2	3	1
	Smooth	159	64	223	68
	Comb or Brush	46	20	66	20
	Total:	236	91	327	100
Interiors:	Smooth	32	52	84	26
	Channelled	61	26	87	26
	Not Preserved	143	13	156	48
	Total:	236	91	327	100

Table 10

SERPENT MOUNDS SITE:
INVENTORY OF IDENTIFIABLE RIM AND
DECORATED SHERDS PER FEATURE

<i>Feature</i>	<i>Vinette 2</i>	<i>Late Woodland</i>	<i>Iroquoian</i>	<i>Total</i>
Serpent Mound (Md.E)	86	8*	none	94
Mound G	27	17*	none	44
Mound I	18	4*	none	22
Habitation area southwest of mound group	305	none	none	305
West Shore area test squares	28	none	none	28
Burial Pits 1, 2 & 3	none	3	none	3
Shell Midden	1440	38	6	1484
Total and %	1904	70	6	1980
	(96.2)	(3.5)	(.3)	(100)
Total Unidentifiable Vinette 2: 453.				

*From surficial 6 inches of mound.

Table 11

SERPENT MOUNDS SITE:
INTERIOR SURFACE TREATMENT;
TYPED SHERDS

<i>Interior Surface</i>	<i>Number</i>	<i>and</i>	<i>%</i>
Channelled	1402		74
Smooth	322		17
Not Preserved	180		9
Total:	1904		100

Table 12

SERPENT MOUNDS SITE:
SURFACE FINISH OF BODYSHERDS;
ALL FEATURES COMBINED

<i>Bodysherds</i>	<i>Surface Finish</i>	<i>Total</i>	and	%
Exterior:	Corded	225		9
	Smoothed Cords	39		2
	Smooth	1090		45
	Comb or Brush	1077		44
	Total:	2431		100
Interior	Smooth	1013		42
	Channelled	977		40
	Not Preserved	441		18
	Total:	2431		100

Table 13

SERPENT MOUNDS SITE:
SURFACE FINISH OF BODYSHERDS;
SHELL MIDDEN

<i>Bodysherds</i>	<i>Surface Finish</i>	<i>Total</i>	and	%
Exterior:	Corded	74		4
	Smoothed Cords	33		2
	Smooth	584		35
	Comb or Brush	979		59
	Total:	1670		100
Interior:	Smooth	692		41
	Channelled	814		49
	Not Preserved	164		10
	Total:	1670		100



Plate 1 *Winter view of Roach's Point with Rice Lake frozen. Serpent Mounds Site is at the southern (right) end of the point. East Sugar Island is in the background.*



Plate 2 *Roach's Point from the northwest. Serpent Mounds Site is at tip of the point in the upper centre.*



Plate 3 *Aerial view of the mound group from the northwest. Mound H in lower centre foreground; the Serpent Mound (Mound E) extends through the trees.*



Plate 4 *Eastern end of the Serpent Mound (Mound E) from the north. Base of north slope of Mound F in left foreground. Compare this view with that in Boyle 1897: Fig. 1.*



Plate 5 *Excavation in the eastern portion of the Serpent Mound (Mound E). Mound extends from lower right to upper left.*



Plate 6 *View from the south of excavation in the western portion of the Serpent Mound (Mound E). Charcoal mass exposed at right centre produced radiocarbon sample M-1105.*



Plate 7 *Cross-sectional profile revealed by excavation in the western part of Mound E. Burial No. 64 (left) in place in a sub-mound pit. The old sod line beneath the mound extends to the right. An intrusion may be seen below the crest of the mound above the burial.*



Plate 8 *Burials No. 1 (right) and 2 in place in a sub-mound grave.*

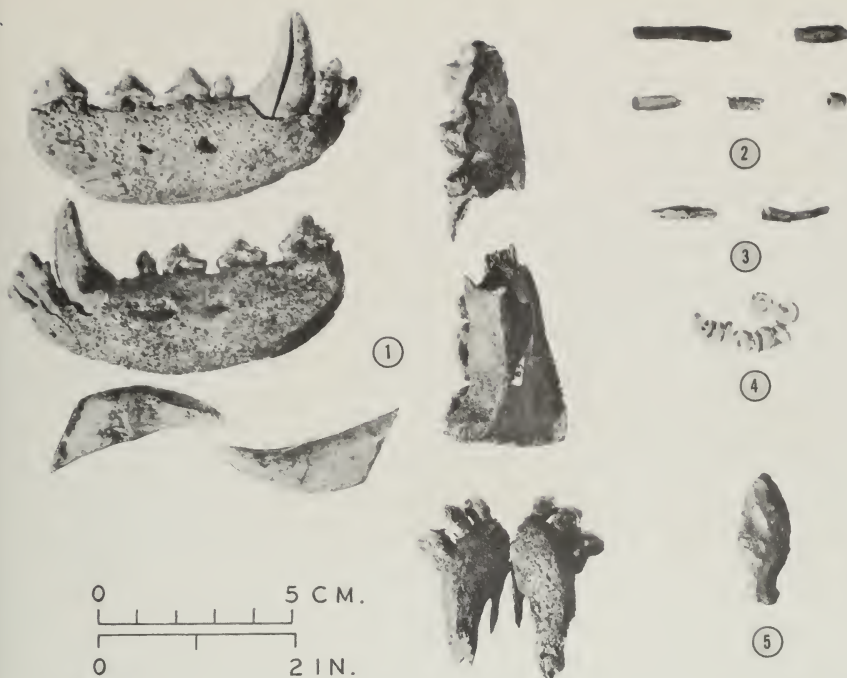


Plate 9 Burials No. 1 and 2 grave goods:
 1. cut wolf mandibles and maxillary elements. 2. copper beads. 3. silver beads.
 4. shell disc beads. 5. projectile point.



Plate 10 Burial No. 4, a primary female adult, flexed on the right side and partially cremated. The charcoal at the upper right, a part of the crematory fuel, furnished radiocarbon sample M-850.



Plate 11 *Burial No. 7. The small white arrow indicates bear mandible and maxillary elements accompanying the secondary male pit burial. The black and white arrow points north and is marked in inches.*



Plate 12 *Burials No. 6 and 7 grave goods:*

1. Burial No. 7: cut bear mandibles and maxillary elements. 2. Burial No. 7: mussel shell fragments. 3. Burial No. 6: projectile point.



Plate 13 *Burial No. 28 in a sub-mound pit. Small white arrows indicate grave goods.*



Plate 14 *Burial No. 28 and grave goods; loon (*Gavia immer*) beak elements in the foreground with animal bones, fossils, concretions and shell disc beads scattered in the vicinity of the skull. The black and white arrow, in inches, points north.*



Plate 15 Burial No. 28 grave goods: 1. fossil nautiloids of the genus *Michelinoceras* of Ordovician age. 2. fossil horn coral. 3. flint chip. 4. concretions. 5. red slate projectile point. 6. carved limestone effigy. 7. shell disc beads. 8. fish scales from a species of the sunfish family *Centrarchidae*. 9. small mammal bones, perhaps fox. 10. cut femur capitulum of a small mammal, perhaps dog. 11. beak elements of the common loon (*Gavia immer*). 12. ground and engraved bear canine.



Plate 16 *Burial No. 34 in a sub-mound pit; note intrusion in profile above the burial.*



Plate 17 *Burial No. 46. Note that the right humerus is missing. The arrow is graduated in inches and points north.*



Plate 18 *Burial Nos. 55 (top) and 56. Parts of the legs of No. 55 were burnt.*



Plate 19 *Turtle carapace, fossil coral and shell disc beads at the rear of the skull of Burial No. 56.*

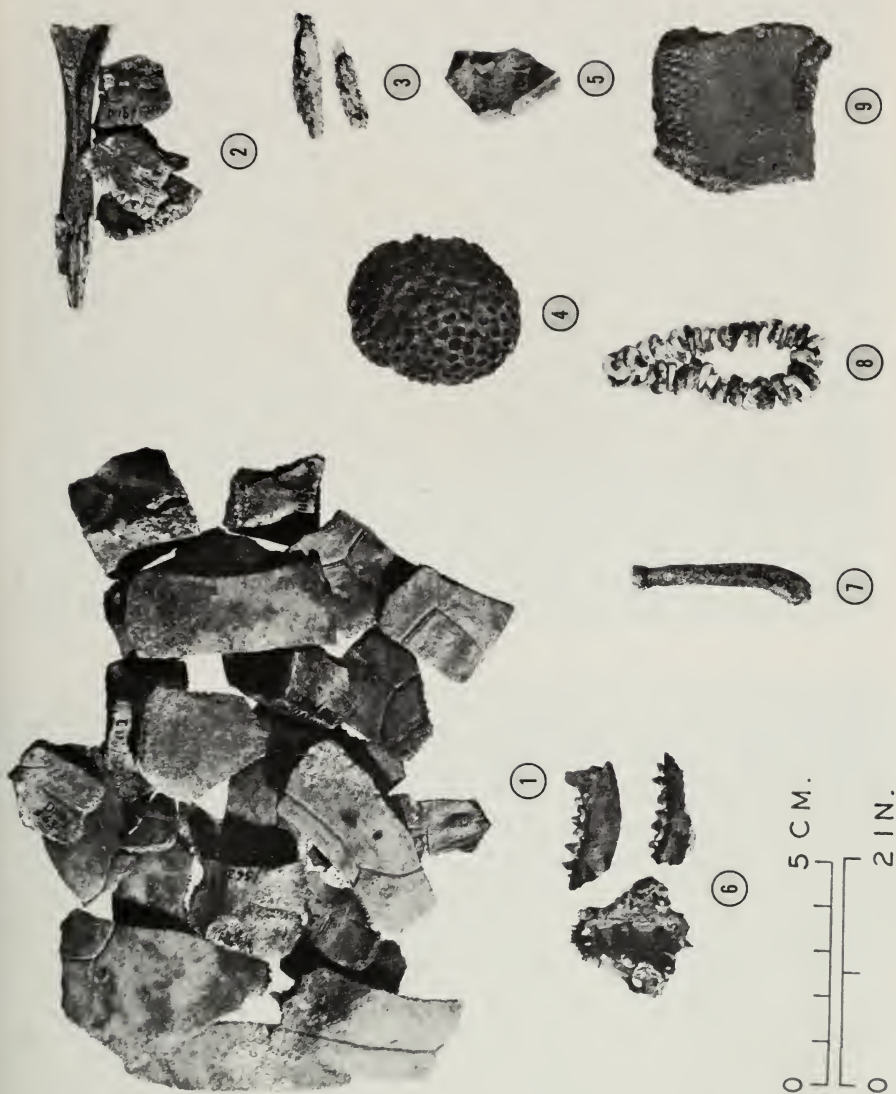


Plate 20 Burial No. 56 grave goods:

1. scutes of the carapace of a painted turtle, genus *Chrysemys*. 2. turtle carapace scutes and part of the beak of a common loon (*Gavia immer*) from in front of the skull. 3. fragmentary wood remains. 4. fossil coral, a Devonian *Favosites*. 5. flint chip. 6. skull and mandible of a mink (*Mustela vison*). 7. shank of a bone fish hook. 8. 41 shell disc beads. 9. sherd from in front of skull.



Plate 21 Burial Nos. 57, 58 and 59 area. Note the dark lenses in the undisturbed fill and the intrusion extending from the upper left.



Plate 22 Burial Nos. 57, 58 and 59 as indicated.

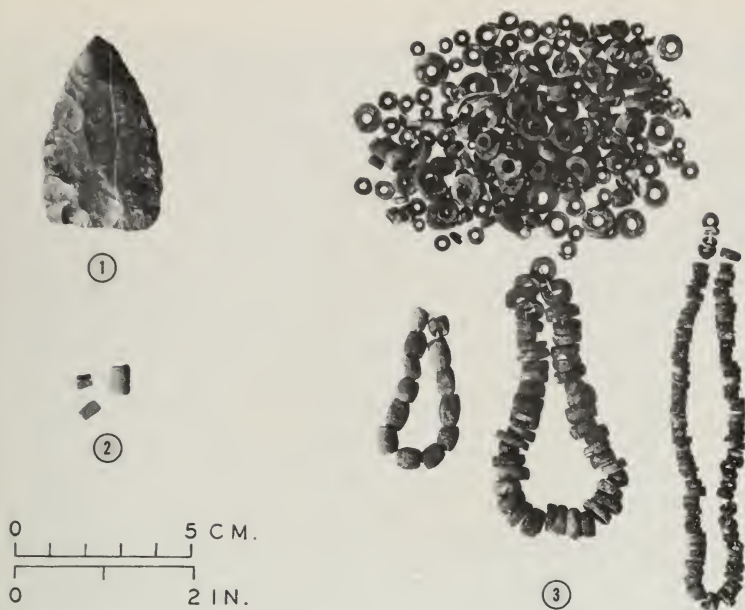


Plate 23 Burial Nos. 60, 61 and 62 grave goods:
 1. Burial No. 60: projectile point. 2. Burial No. 61: copper beads. 3. Burial No. 62:
 370 shell beads of large and small disc and barrel-shaped variety.



Plate 24 Sub-mound Burial No. 64 and associated wood remains, the white material
 east (to the right) of the burial. Pointer is one foot in length.

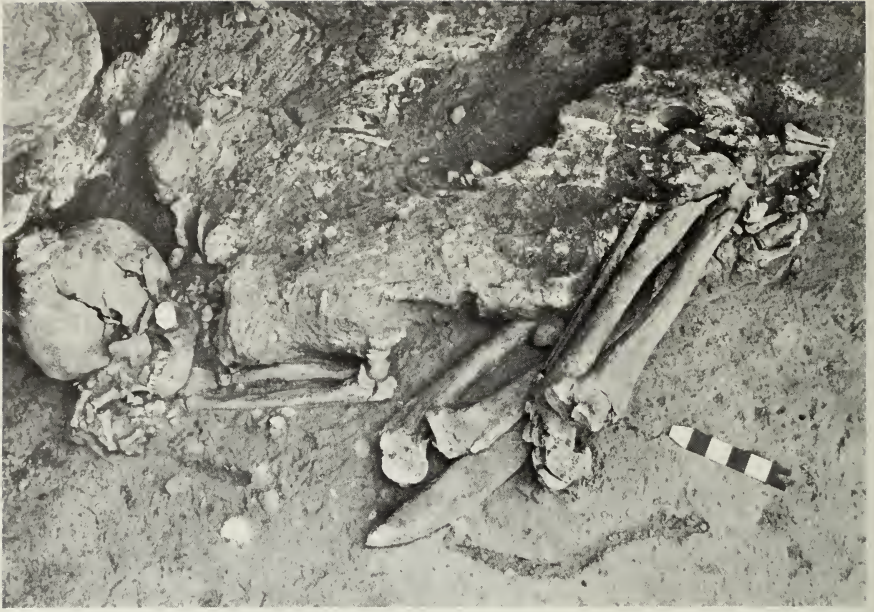
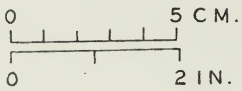


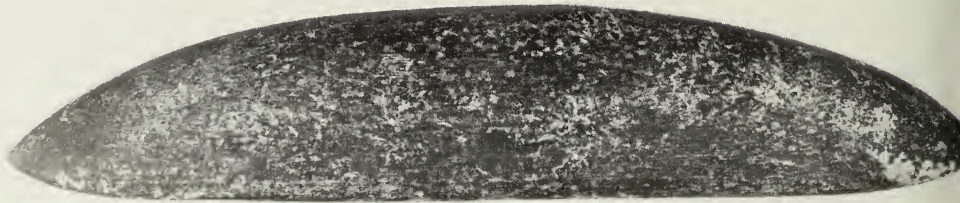
Plate 25 *Burial No. 64 covered with white wood remains with "pick" in place in the knee region.*



①



②



③

Plate 26 *Burial No. 64 grave goods:*
1. mussel shell fragments. 2. sherd. 3. large double-bitted adze or pick.

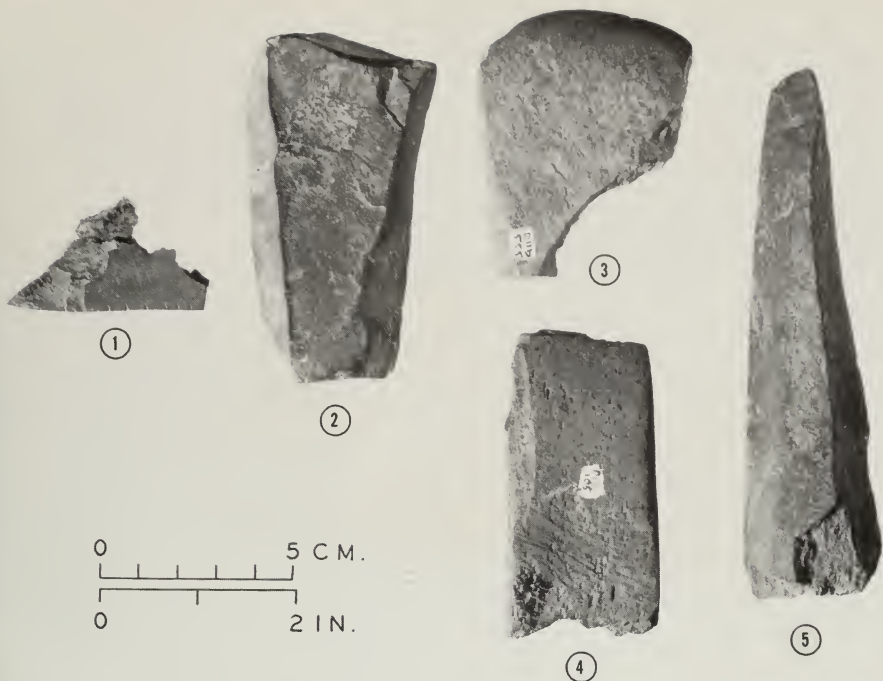
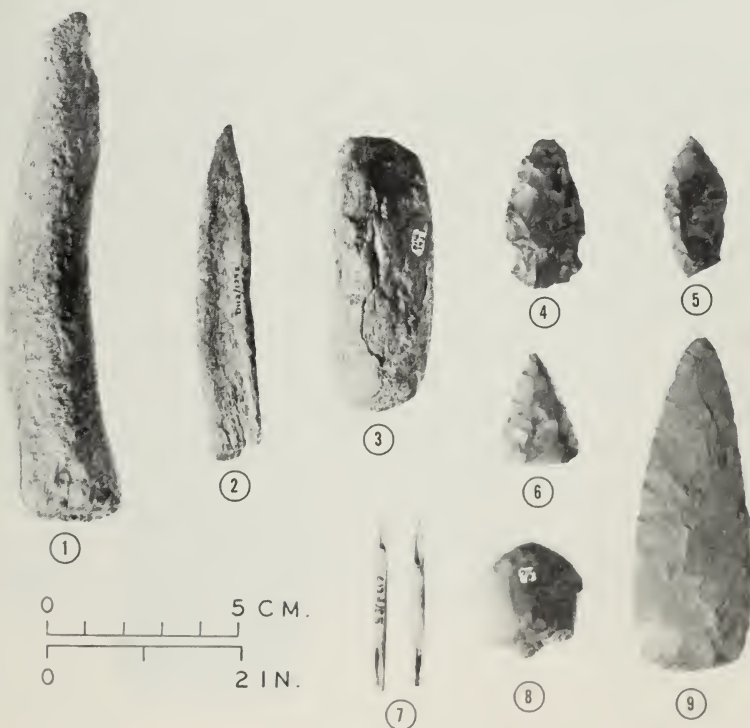


Plate 27 Ground stone material from the fill of the Serpent Mound (Mound E):
 1. polished slate fragment notched along prepared edges. 2, 3, 4 and 5. adze fragments.

Plate 28 Antler, bone and chipped stone material from the fill of the Serpent Mound (Mound E):
 1. antler tine. 2. antler splinter awl. 3. socketed antler handle. 4, 5 and 6. projectile points. 7. cut bird bone pins. 8. scraper. 9. projectile point.

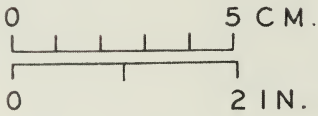




①



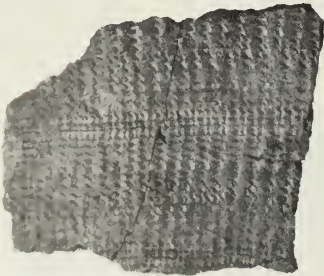
②



③

Plate 29 Sherds from the fill of the Serpent Mound (Mound E):
1 and 2, aberrant Vinette 2 sherds. 3, rim conforming to Inverhuron Dentate type.

Plate 30 Sherds from the fill of the Serpent Mound (Mound E):
1 and 2, Point Peninsula Rocker Stamped. 3, St. Lawrence Pseudo Scallop Shell.
4, rim of Glen Meyer ware (sod zone).



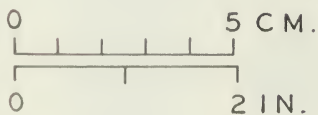
①



②



③



④



Plate 31 *Burials in the upper portion of the Mound G mass grave. Note the dark fill of the pit in which the burials were placed. Small white arrows indicate sherds.*



Plate 32 *Excavated area through Mound G. Burials and dark pit fill exposed beneath centre of mound.*



Plate 33 *Burials at the bottom of the central mass grave pit beneath Mound G after removal of the fill.*

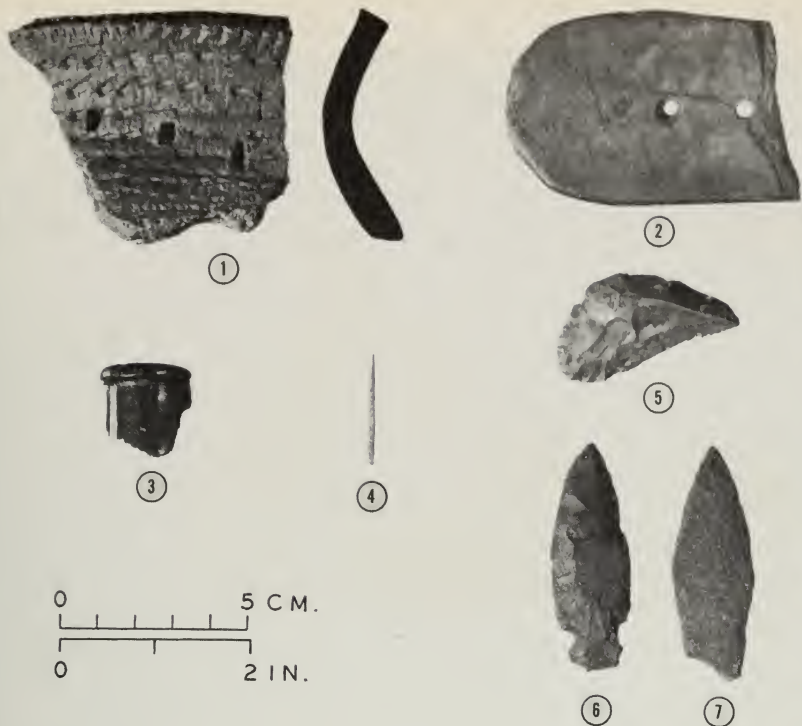


Plate 34 Material from Mound G and adjacent test squares:

1. rimsherd of Late Woodland type from the sod zone. 2. broken gorget from mound fill. 3. soapstone pipe bowl from a test square. 4. copper pin from a test square. 5. scraper from mound fill. 6. projectile point from a test square. 7. projectile point made of a modified schist fragment from mound fill.



Plate 35 Mound I outlined by white markers with the central mass grave partially exposed in the excavation.



Plate 36 Mound I burials as indicated; Burial No. 24 at lower left, Burial No. 16 extends from lower right to upper left throughout which white arrows indicate the scattered parts of Burial No. 23.



Plate 37 Mound I burials; skull of Burial No. 24 at upper left centre, secondary Burial No. 39 in centre and total cremation Burial No. 40 at right.



Plate 38 *A portion of the Mound I central mass grave.*

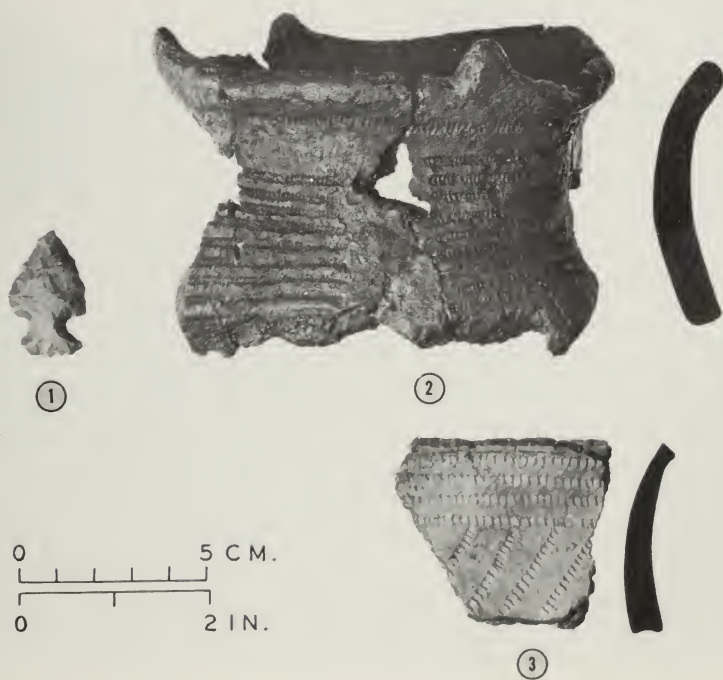


Plate 39 *Material from Mound I:*
 1. projectile point. 2. Late Woodland rim from the sod zone. 3. rim of the Rice Lake Banded type.



Plate 40 *Excavation in the habitation area southwest of the mound group. Rice Lake in the background.*



Plate 41 *A portion of the habitation area southwest of the mound group cleared to show postholes and the dark pit fill at the right centre. North is to the left.*

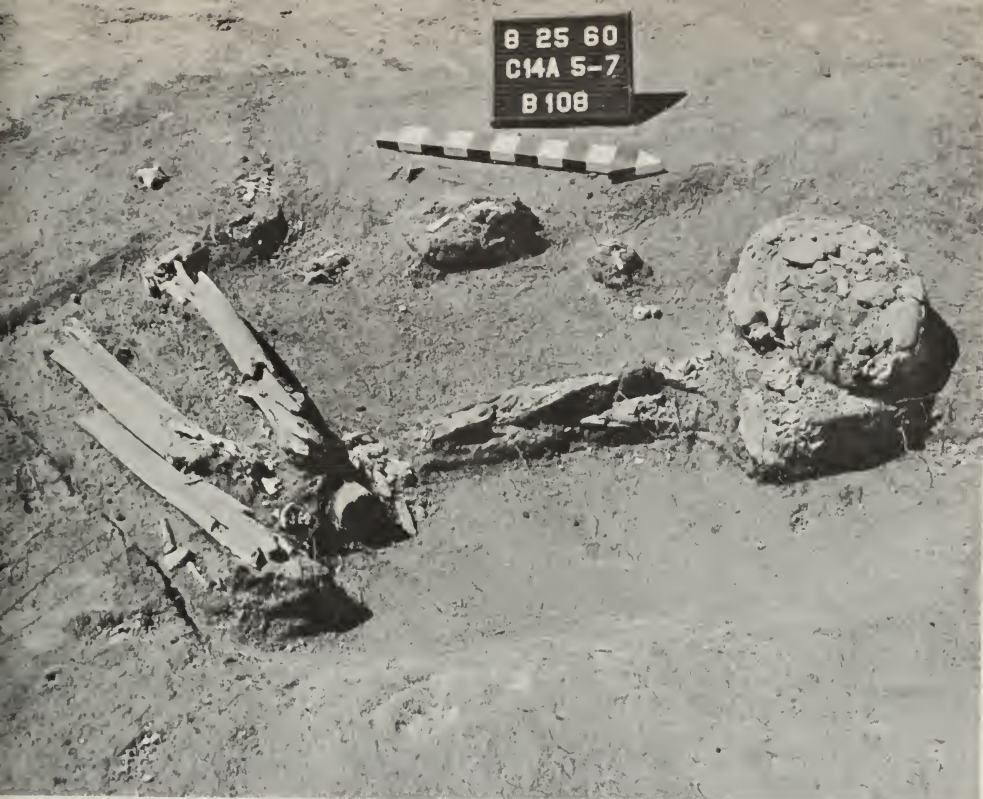


Plate 42 *Burial No. 108 in the habitation area southwest of the mound group.*

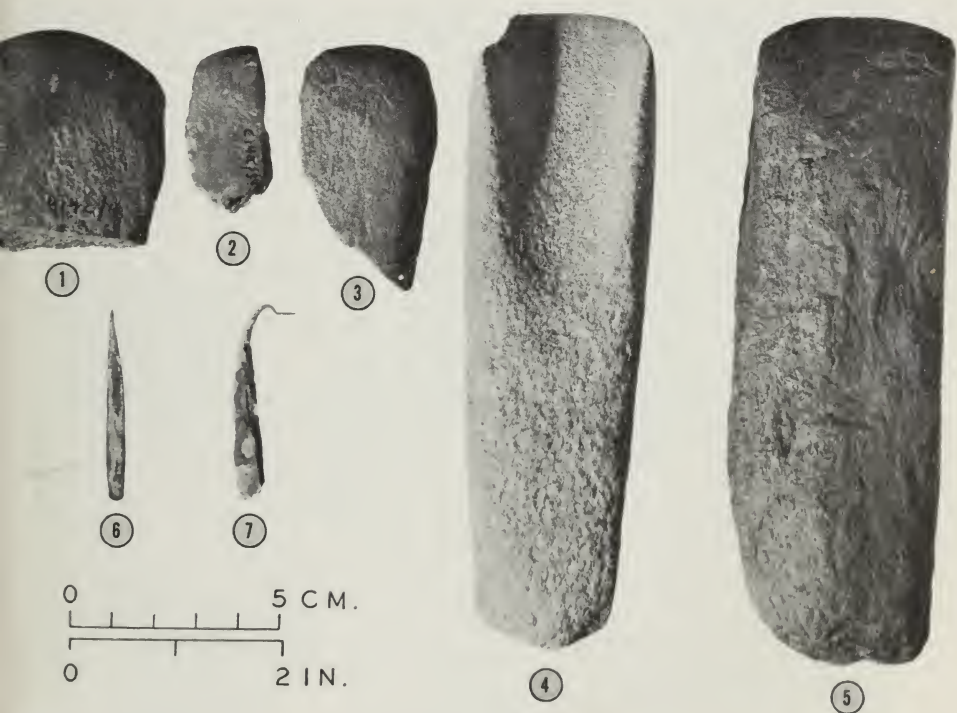


Plate 43 *Material from the habitation area southwest of the mound group: 1, 2 and 3, adze fragments. 4, gouge. 5, adze. 6 and 7, copper pins.*

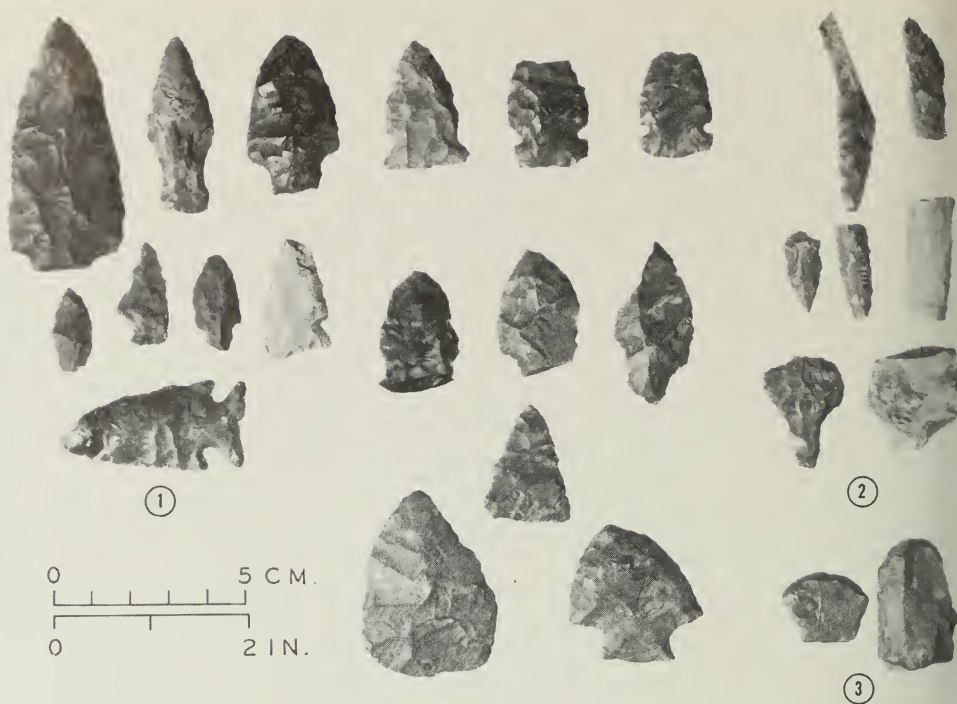


Plate 44 Chipped stone material from the habitation area southwest of the mound group and west shore area test squares.

1. projectile point from west shore area test square. All other projectile points from the habitation area southwest of the mound group. 2. drills and drill fragments from the habitation area southwest of the mound group. 3. scrapers from the habitation area southwest of the mound group.

Plate 45 Antler point and sherds from the habitation area southwest of the mound group:

1. antler projectile point. 2, 3, 4 and 5. St. Lawrence Pseudo Scallop Shell sherds.

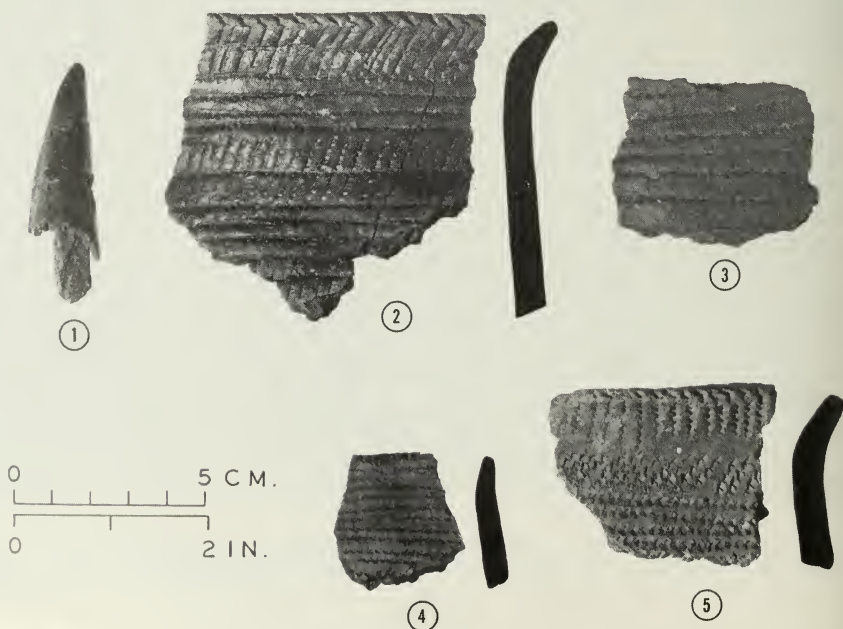




Plate 46 *Excavated Rows 36, 37 and 38 in the shell midden as seen from Rice Lake.*



Plate 47 *Shell midden excavation; Row 58 in the foreground.*

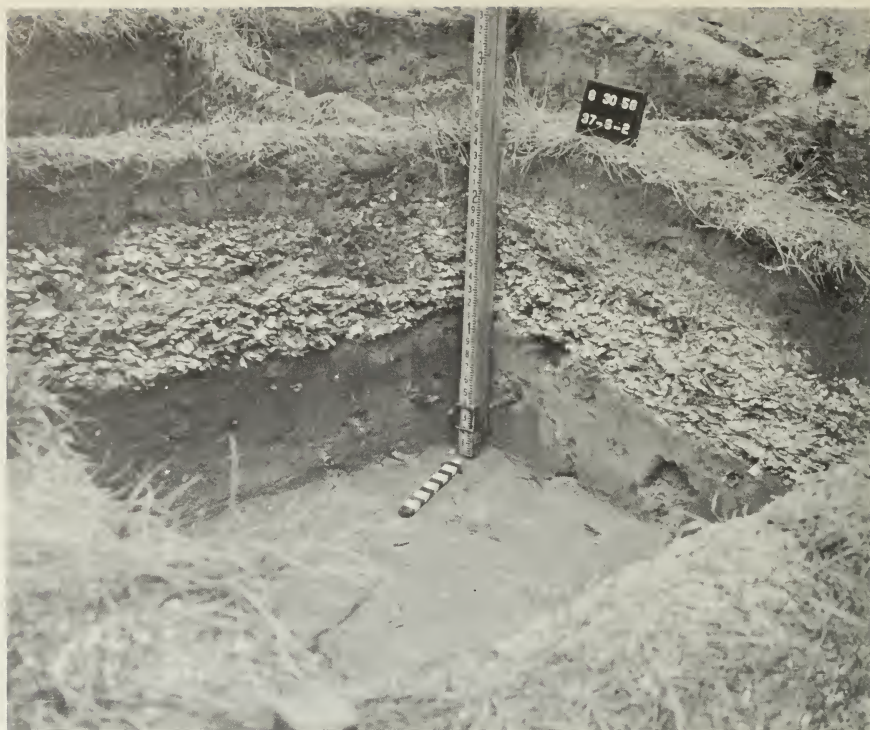


Plate 48 *Typical shell midden stratigraphy as seen in square 37-S-2.*



Plate 49 *Shell midden square 60-S-2. Radiocarbon sample M-1104 was collected from immediately beneath the shell layer in the vicinity of the corner under the sign board.*



Plate 50 Profile of the shell midden exposed in grid walls; Rows 59, 60 and 61 (left to right).



Plate 51 Stratigraphy in shell midden square 38-S-2. Sherds at the bottom of the shell layer (on pedestal) are shown reconstructed in Plate 65.

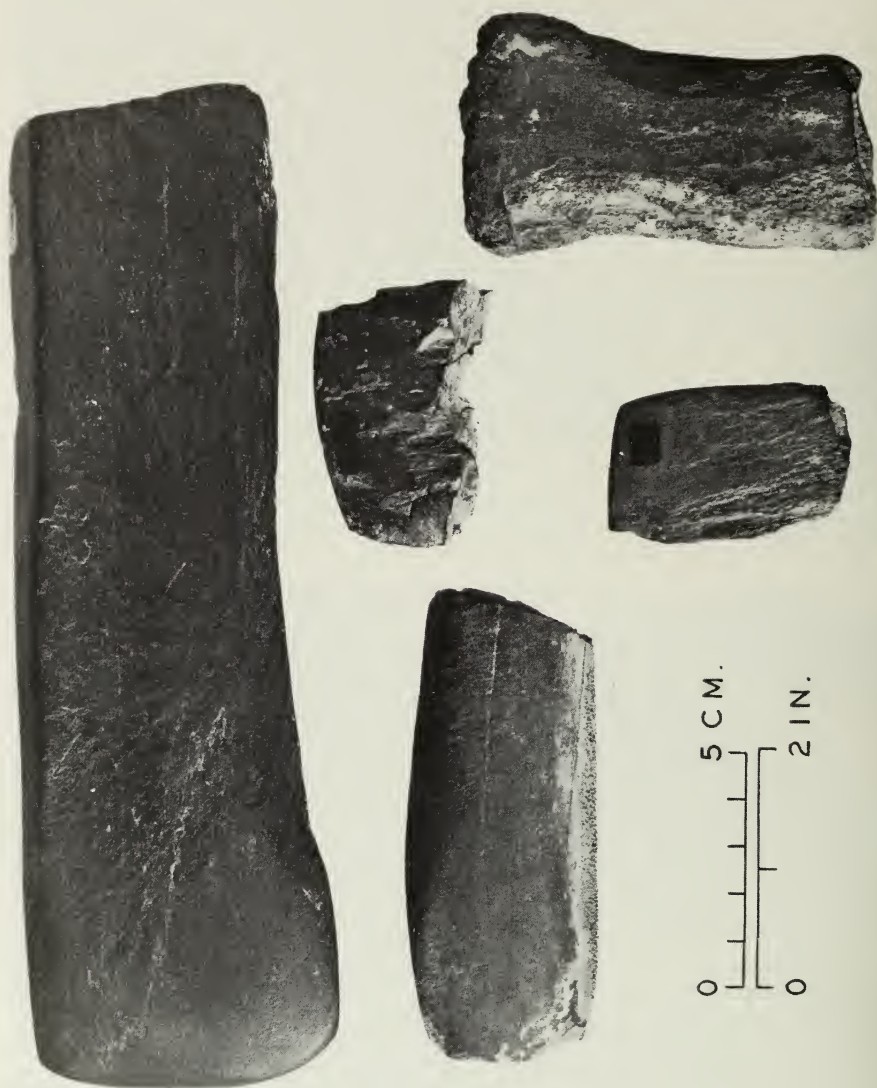


Plate 52 *Adzes and adze fragments from the shell midden.*

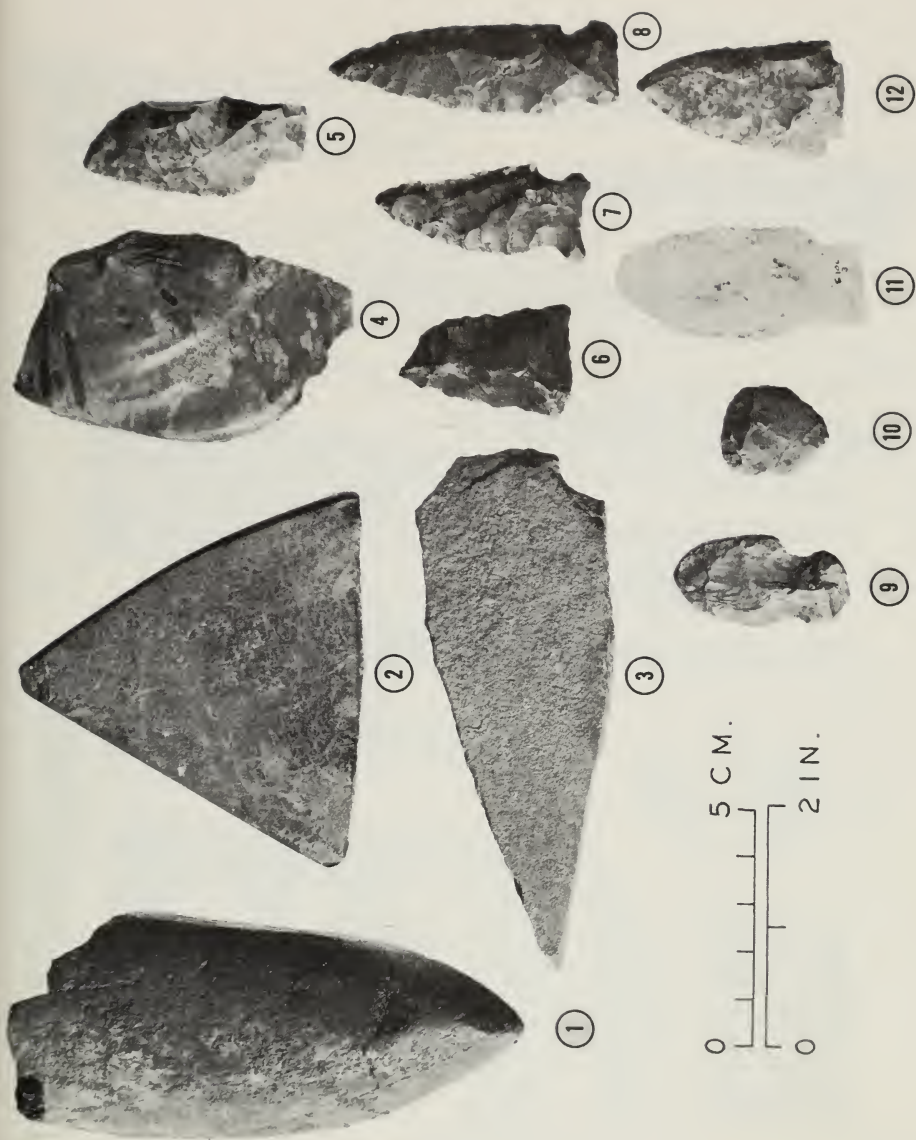


Plate 53 Ground and chipped stone from the shell midden:
 1. broken adze or axe. 2 and 3. modified siltstone, unknown function. 4. flint spall.
 5, 6, 7 and 8. projectile points. 9. strike-a-light. 10. scraper. 11 and 12. projectile
 points.

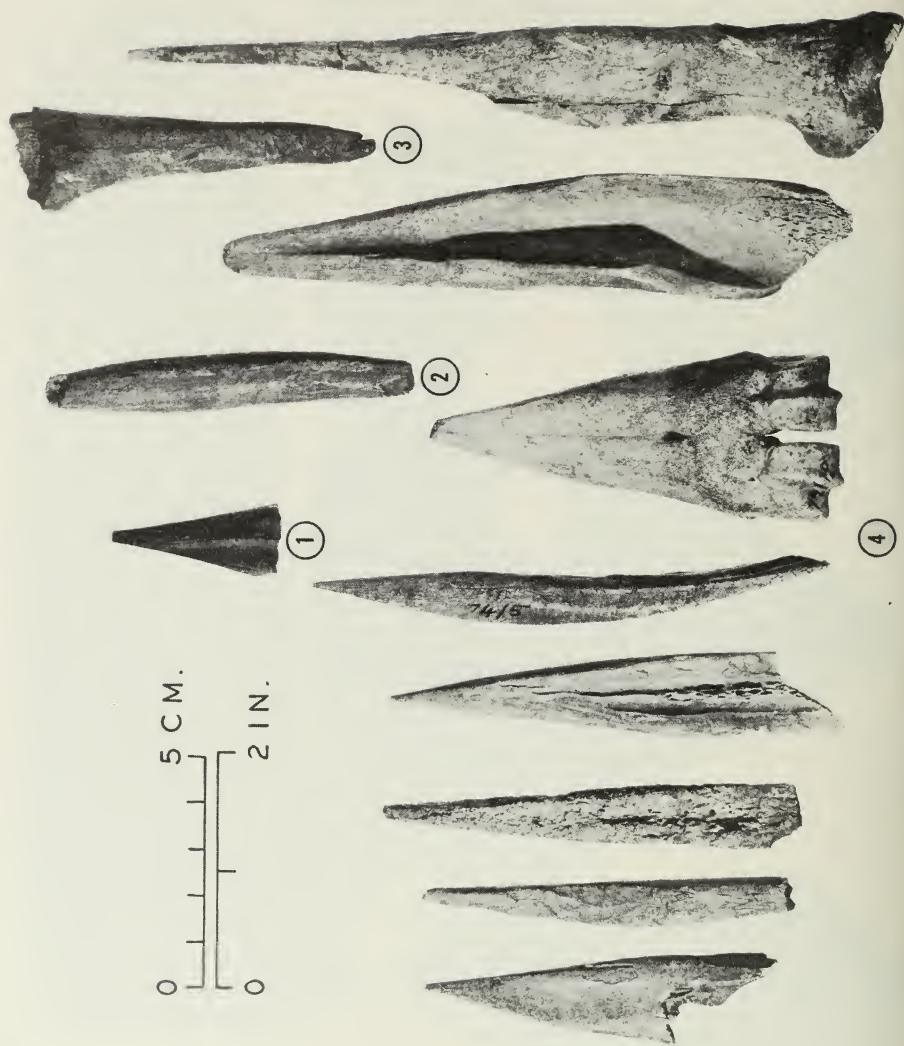


Plate 54 Bone objects from the shell midden:

1. burnt awl fragment. 2. drifter. 3. antler tine. 4. awls; specimen at right is a modified bear ulna (*Ursus americanus*).

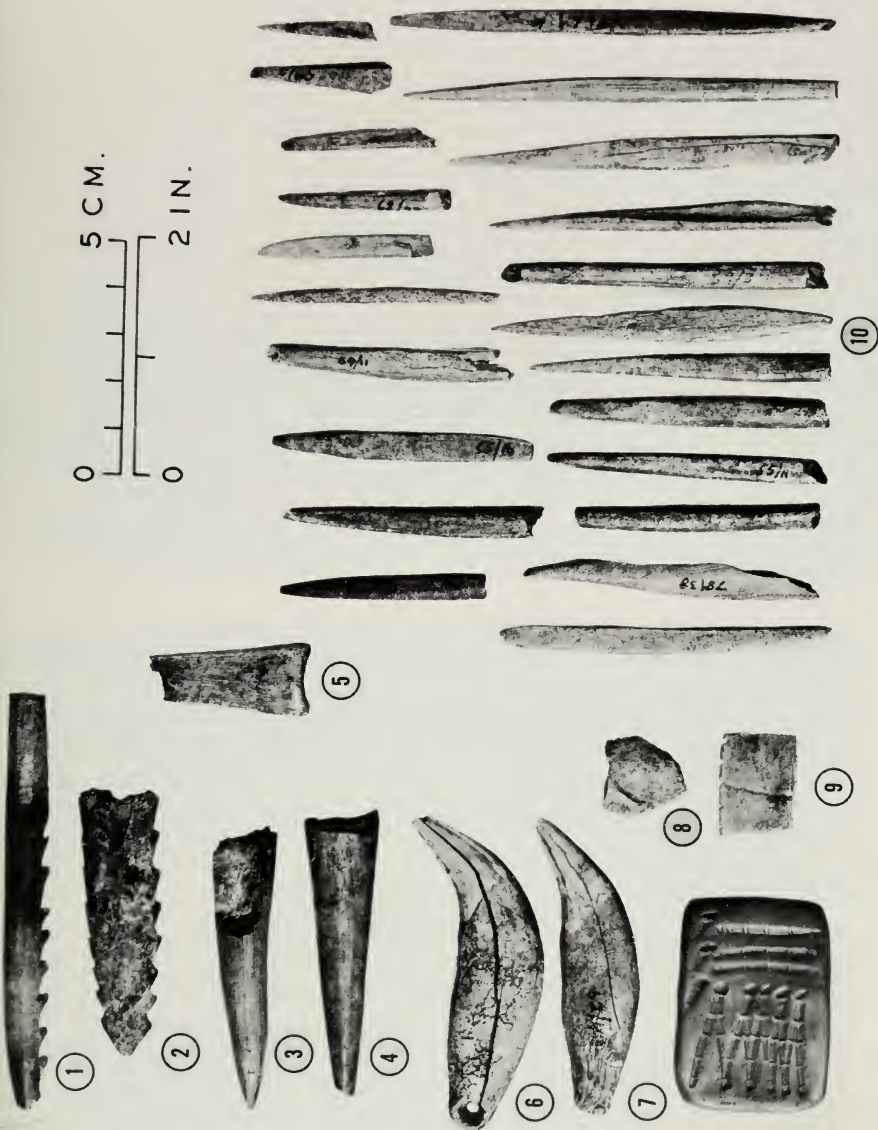


Plate 55 Bone objects from the shell midden:

1 and 2. barbed harpoons. 3 and 4. socketed antler projectile points. 5. sharpened, polished bone object, unknown function. 6. and 7. bear teeth (*Ursus americanus*); No. 6 is drilled apically. 8. notched bone fragment, pottery decorator. 9. notched turtle scute, pottery decorator used to impress plasticene at left. 10. bone pins.



Plate 56 *Burial Pit No. 2 excavation; note the contour of the surface (wall) over the dark pit filling.*



Plate 57 *Burial Pit No. 2 with earth fill removed and burial content in place. Striped pointer is one foot in length.*



Plate 58 Close-up of the bone content in the southeast portion of Burial Pit No. 2.

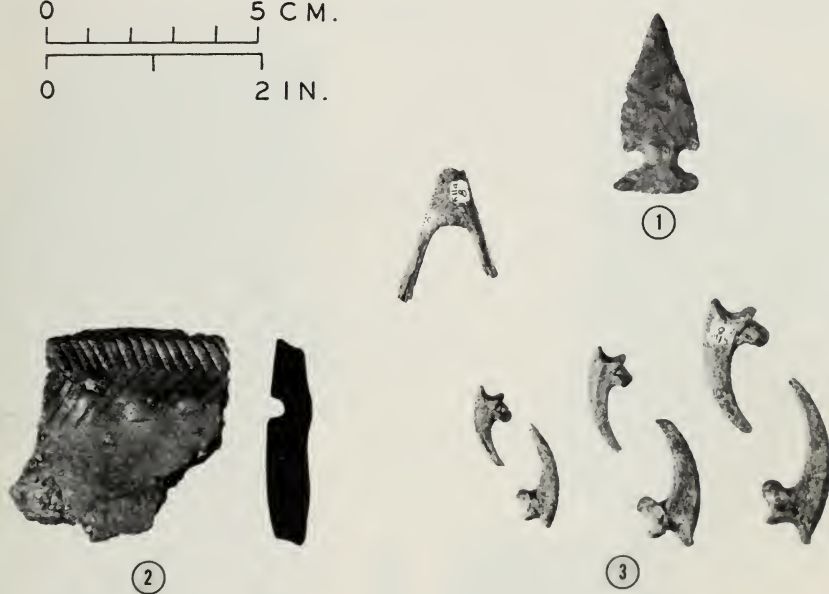
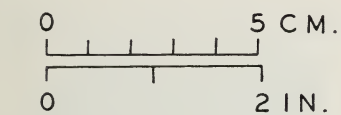
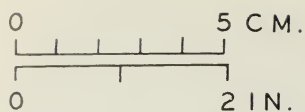
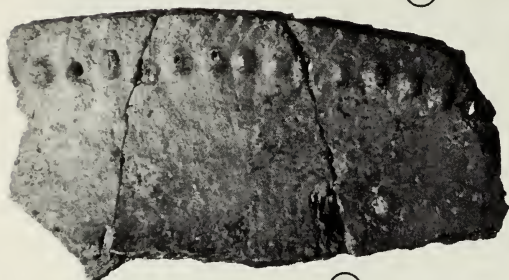


Plate 59 Material from Burial Pit No. 1: 1. projectile point. 2. Glen Meyer sherd. 3. talons and mandible of the golden eagle (*Aquila chrysaetos*).



②



③



④

Plate 60 Material from Burial Pit Nos. 2 and 3:

1. dog (*Canis familiaris*) mandible from Burial Pit No. 3. 2. adze from Burial Pit No. 2. 3. sherds from Burial Pit No. 2.

Plate 61 Shell midden sherds:

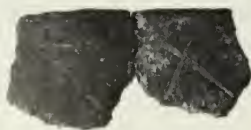
1 and 2. examples of interior striation. 3. incised rim. 4. Vinette Dentate rim.



①



②



③



④



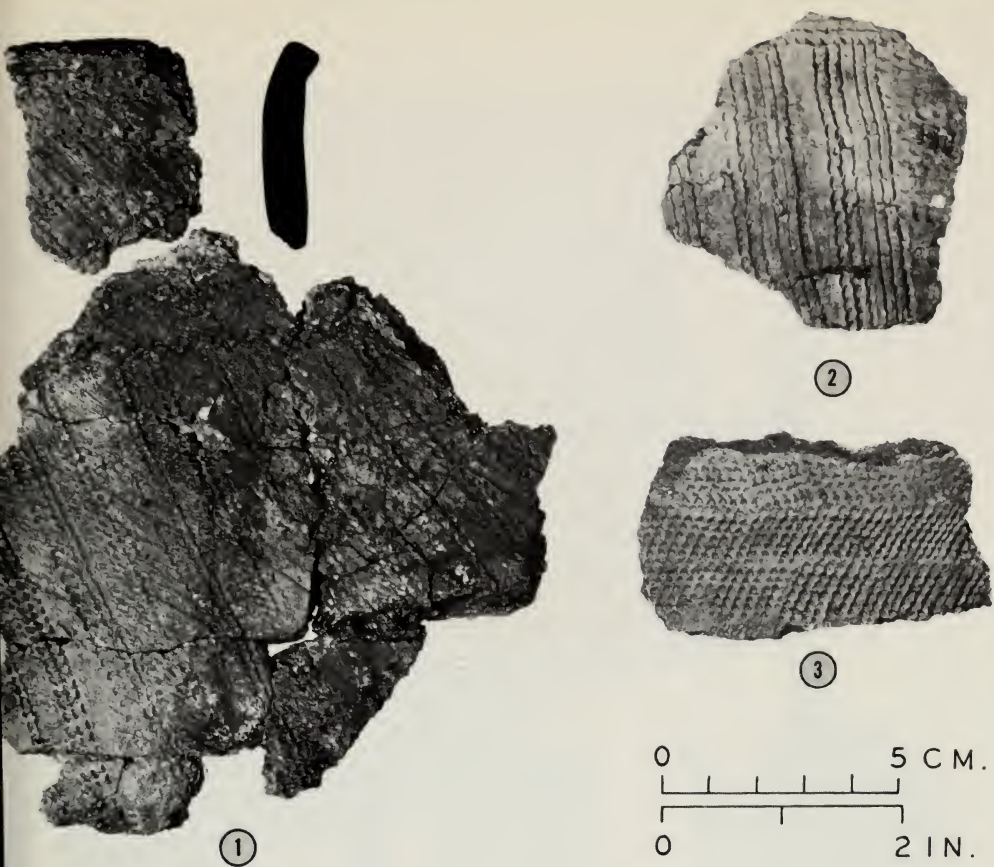
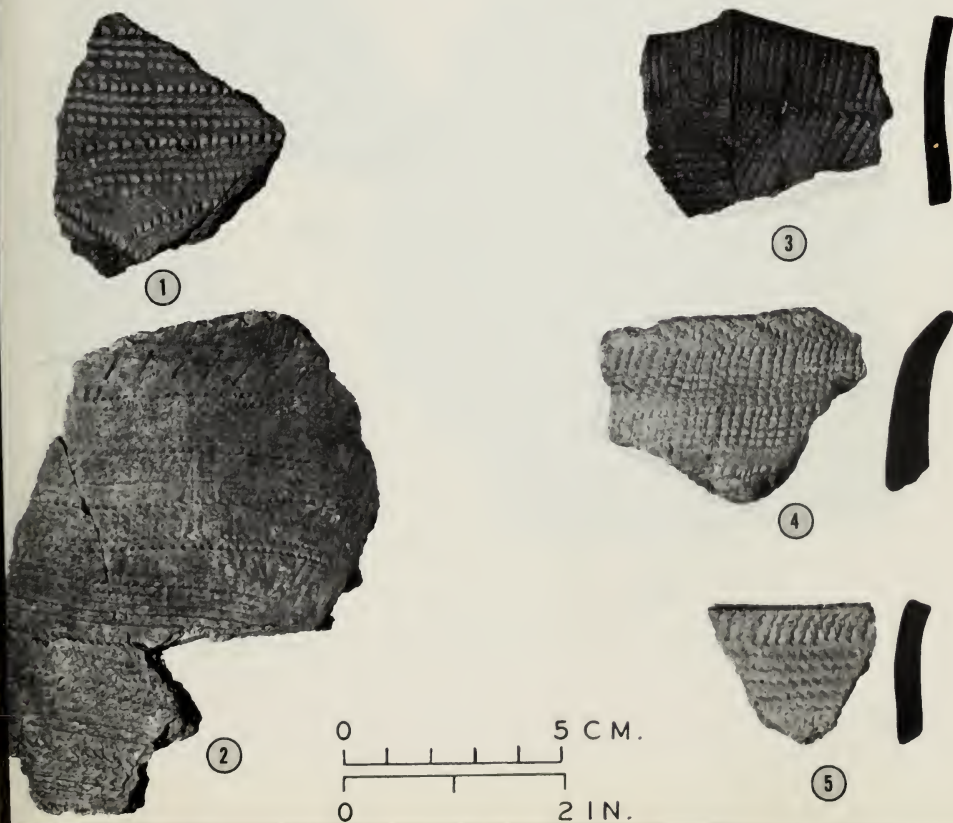


Plate 62 *Shell midden sherds: Vinette Complex Dentate.*

Plate 63 *Shell midden sherds:*

1 and 2. Vinette Complex Dentate. 3, 4 and 5. St. Lawrence Pseudo Scallop Shell.



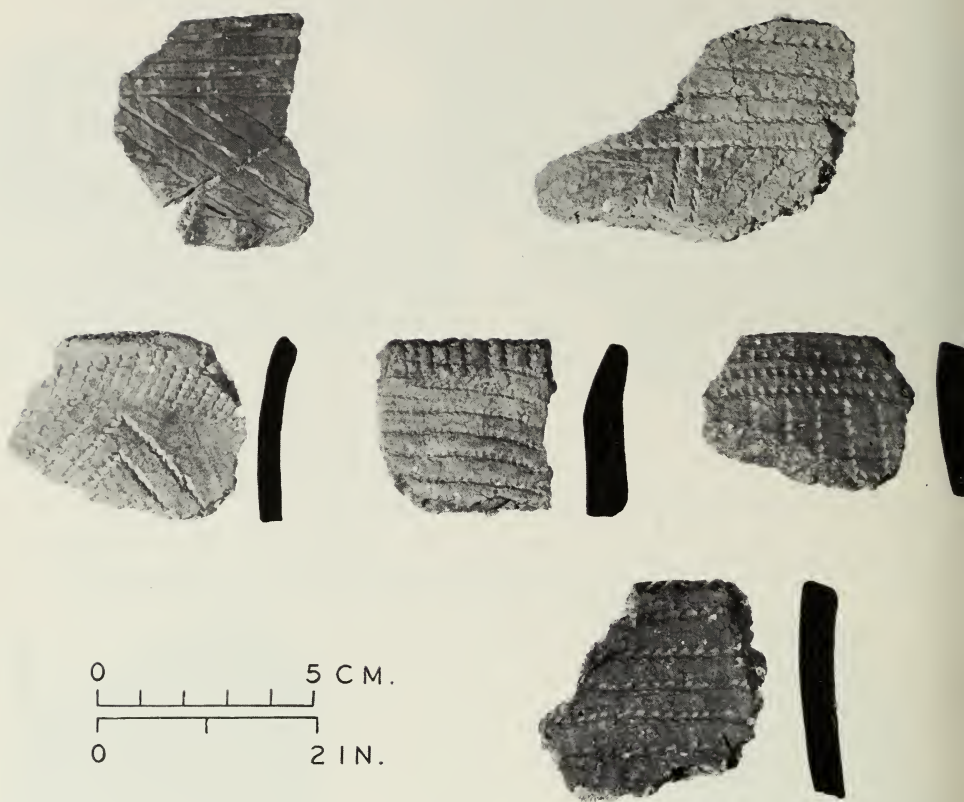
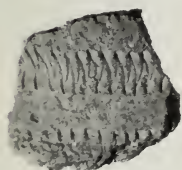


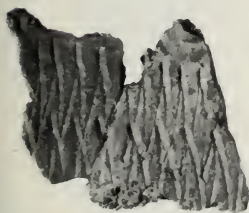
Plate 64 *Shell midden sherds: Point Peninsula Corded type.*



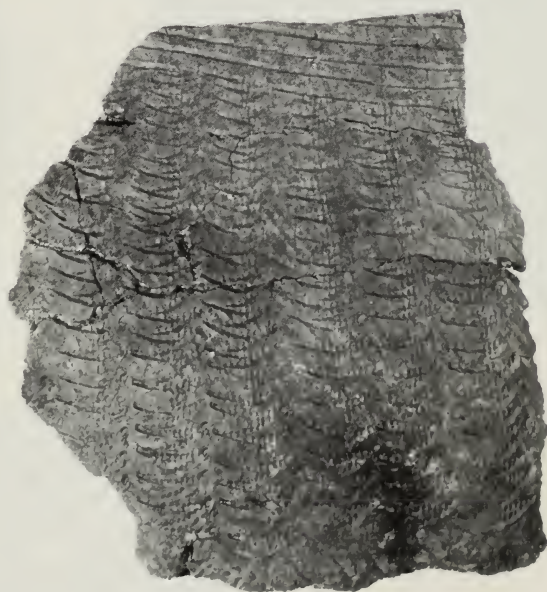
①



②



③



④

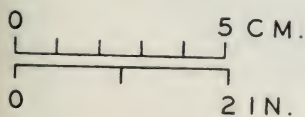


Plate 65 Shell midden sherds: Point Peninsula Rocker Stamped type. No. 1 may be seen in situ in Plate 51.

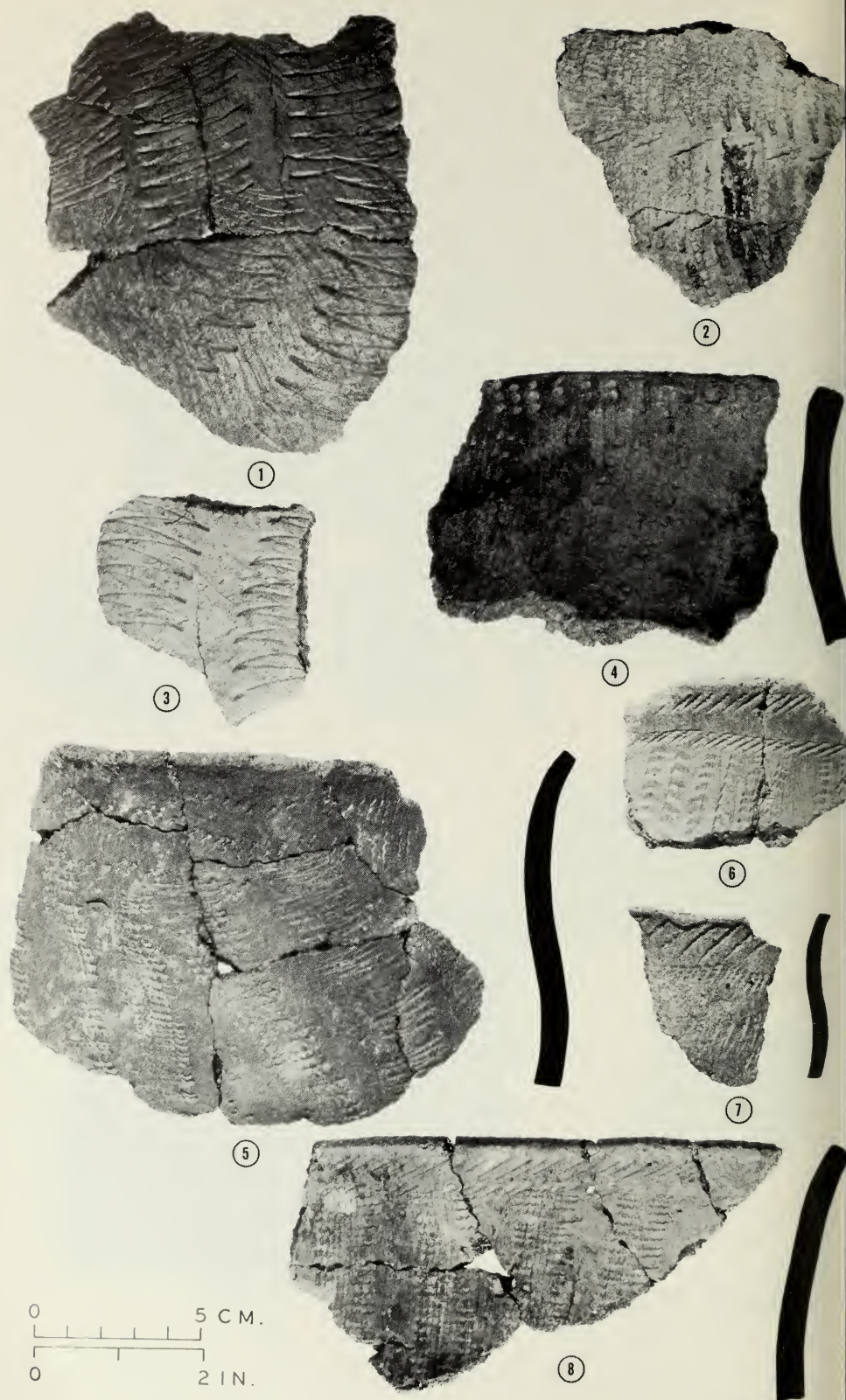


Plate 66 *Shell midden sherds; Point Peninsula Rocker Stamped type.*

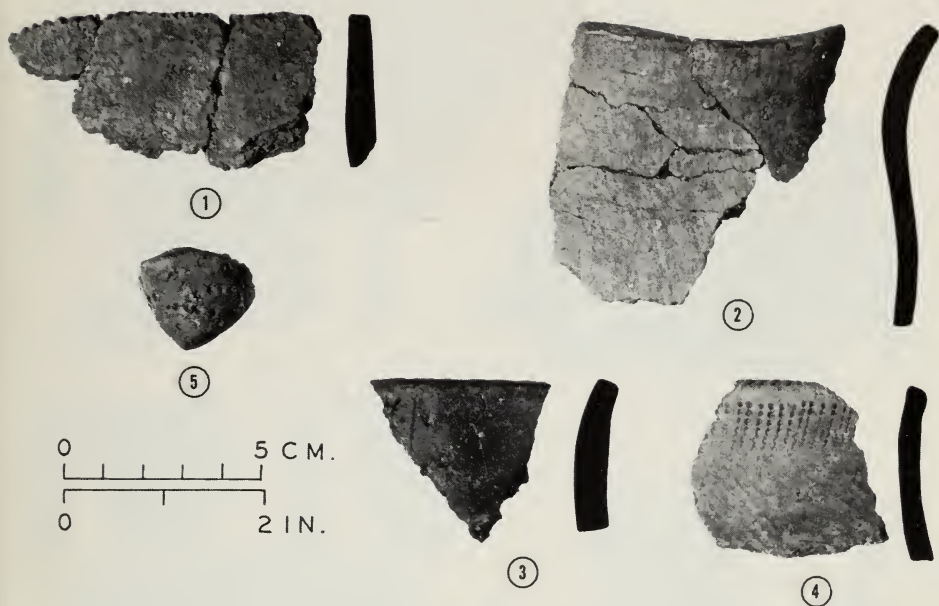


Plate 67 *Shell midden sherds:*
 1, 2, 3 and 4. *Point Peninsula Plain type.* 5. *toy vessel.*

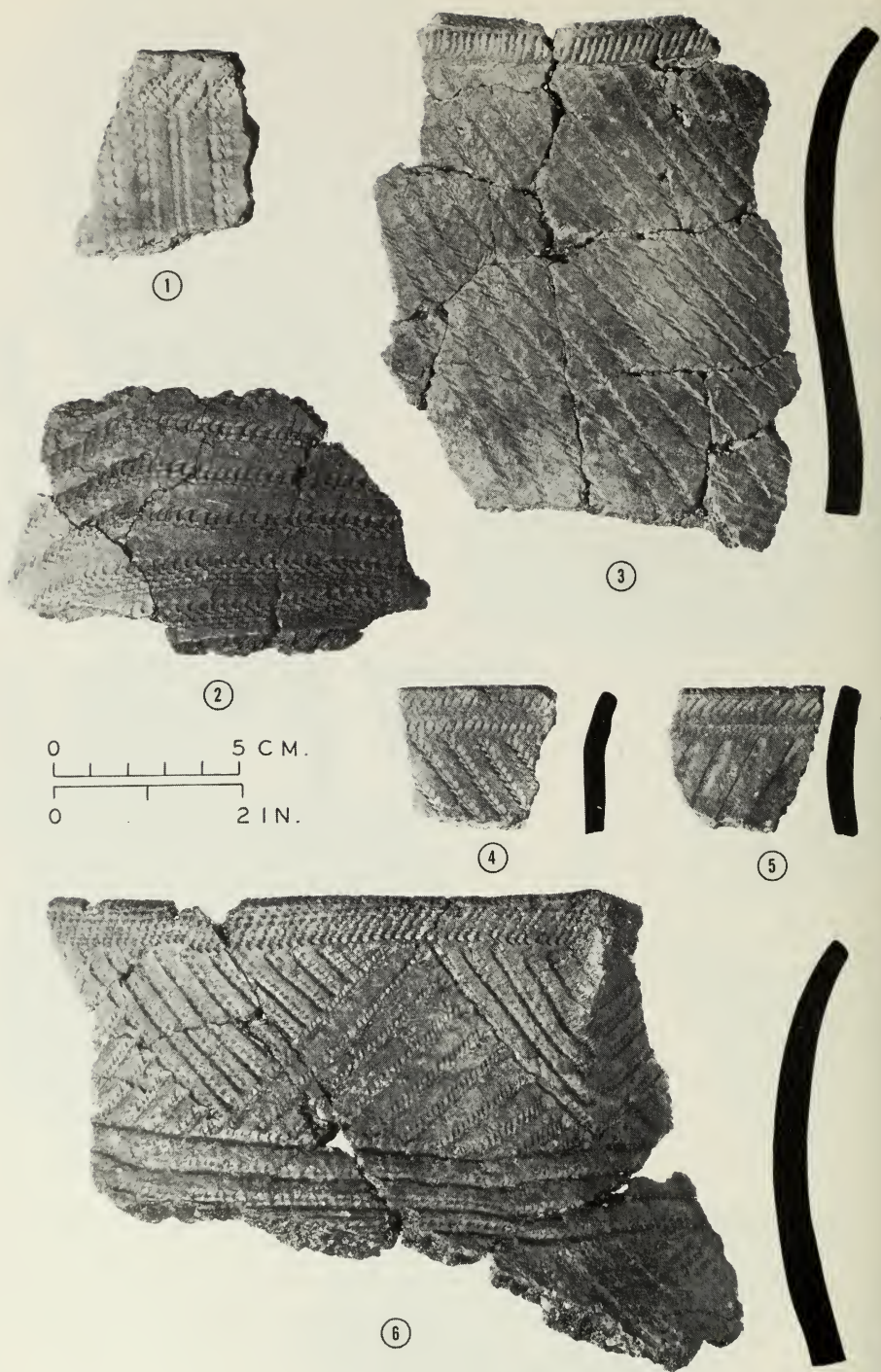


Plate 68 *Shell midden sherds: Rice Lake Banded type.*

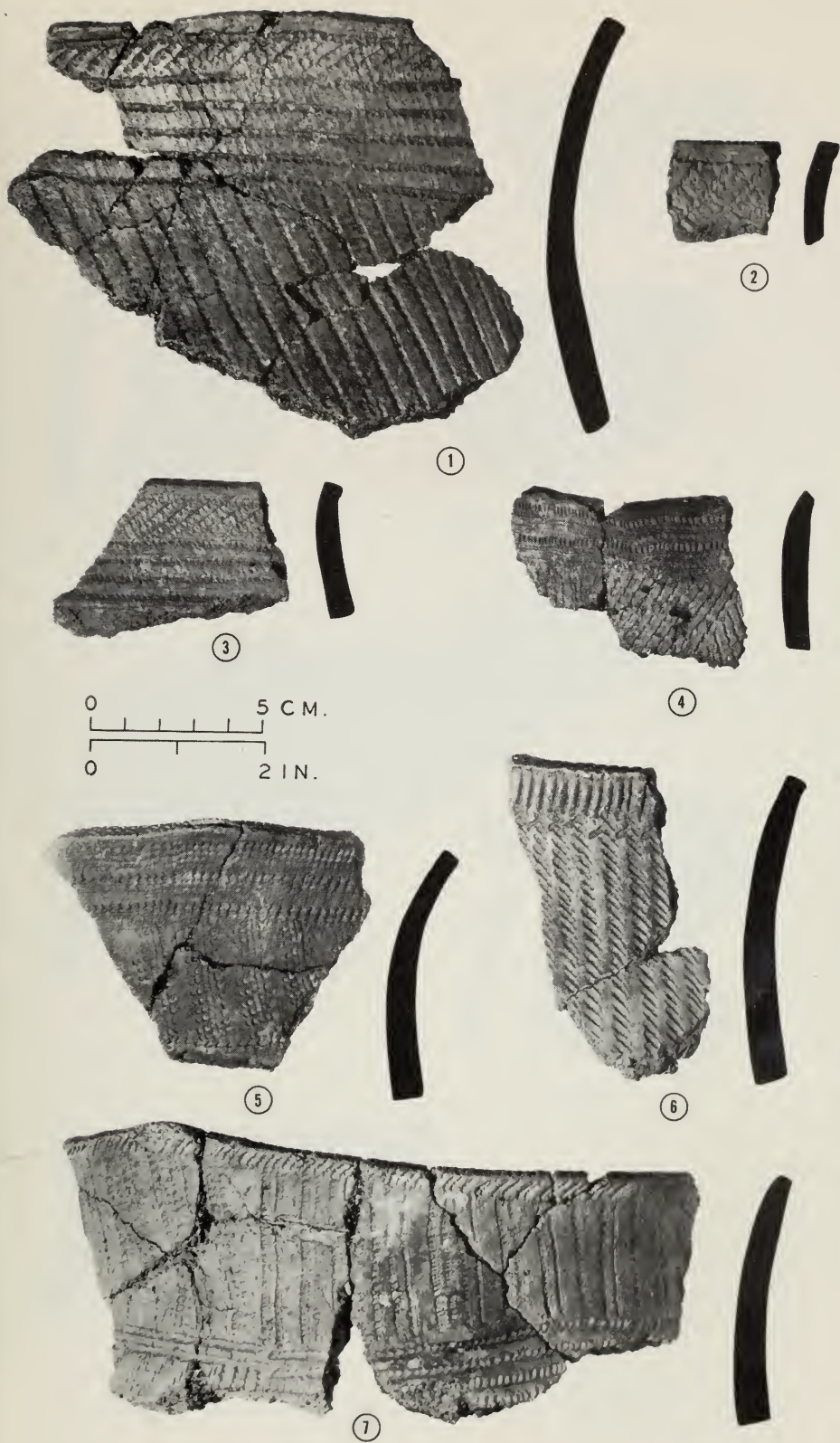


Plate 69 *Shell midden sherds: Rice Lake Banded type.*

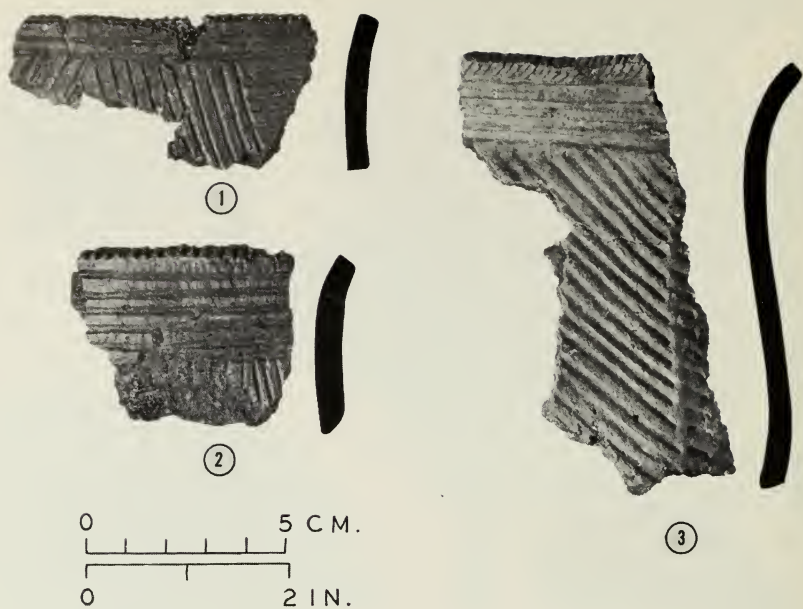


Plate 70 *Shell midden sherds: Rice Lake Banded type.*

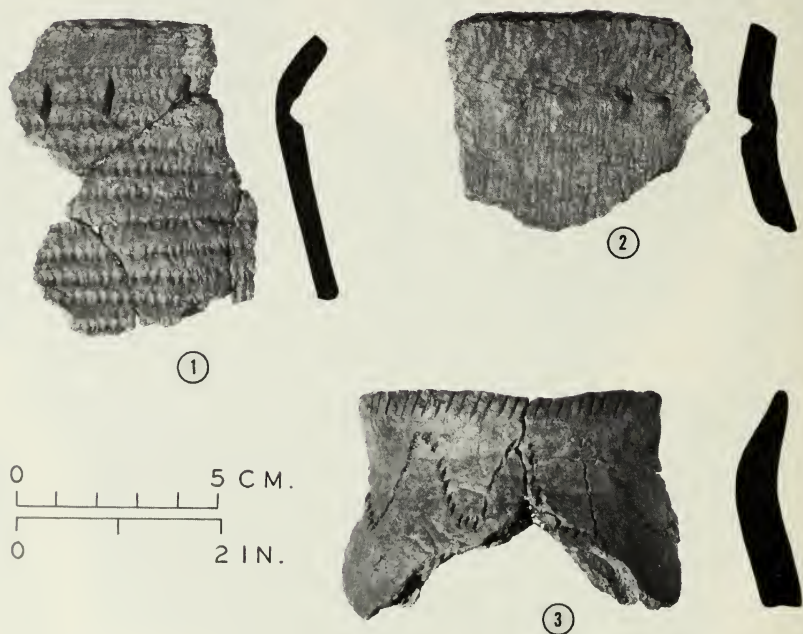
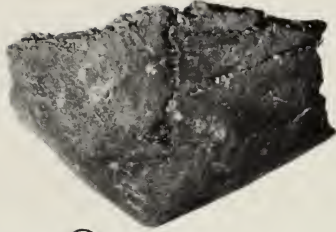
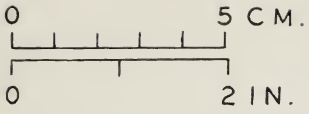
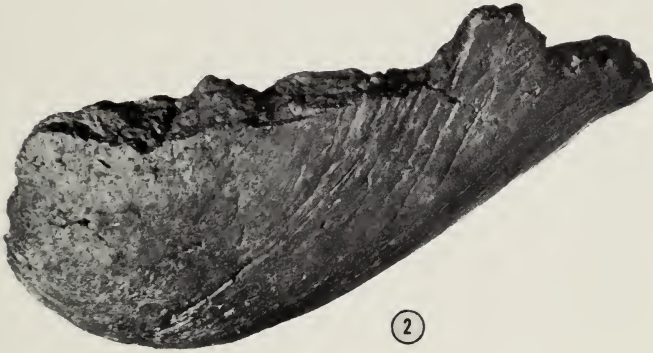


Plate 71 *Shell midden sherds: 1 and 2. Late Woodland sherds. 3. rim of Iroquoian seed pot.*



①



②

Plate 72 *Shell midden sherds: 1. pointed pot bottom. 2. conical pot bottom.*

7124

LIBRARY
ROYAL ONTARIO MUSEUM

LIBRARY
ROYAL ONTARIO MUSEUM

